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15 & 16 VICTORIÆ, Cap. 83. Sec. XXXII.

APPENDIX

TO

REFERENCE INDEX

OF

PATENTS OF INVENTION,

CONTAINING

ABSTRACTS FROM SUCH OF THE EARLY PATENTS AND SIGNET BILLS AS DESCRIBE THE NATURE OF THE INVENTION, AND WHICH PATENTS HAVE NO ENROLLED SPECIFICATIONS.

Printed and Published by Order of the Honourable the Commissioners of Patents,

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ACT of 15 & 16 VICTORIÆ, Cap. 83. Sec. XXXII.

BY BENNET WOODCROFT,

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APPENDIX

TO

REFERENCE INDEX OF PATENTS OF INVENTION.

A.D. 1617 . . . . N° 1.

RATHBORNE AND BURGES.

Engraving and Printing Maps.

JAMES, by the Grace of God Kinge of Englande, Scotland, Fraunce, and Ireland, Defendor of the Faith, &c. To all Justices of Peace, Mayors, Sherriffe, Bailiffes, Constables, and all Officers, Ministers, and Subiectes of Vs, Our heires and successors, to whome it shall or maie appertaine, and to everie of them, greetinge: Whereas Wee are informed that amongste forraine nations there are faire, curious, and artificiall descripcons, plottes, and mappes made and sett forth of their principall citties and townes of greatest noat, which beinge exactlie drawne out in mettall and printed of are dispersed and sent abroad into all partes, to the greate honor and renowne of those princes in whose domynions they are, And that of Our cittie of London, being the cheife and principall in this Our kingdome of England, there hath never been made or taken any true or pfecte descripcon, but false and meane draughtes cutt out in wood, and soe dispersed abroade, to the greate disparagement and disgrace of soe famous and worthie a state: And whereas Our lovinge subiecte, Aron Rathborne, gentleman, practicōner in the mathematiques, hath a greate desire to take a pfecte survaie aswell of the said cittie of London as of divers other places within this Our kingdome of England hereafter mencōned, and to make such exacte plottes, mappes, and descripcons thereof as hath not been hitherto pformed by anie, And hath humblie besought Vs that Wee woulde bee graciouslie pleased to graunte vnto him Our Royall Lycence and Priviledge, the wante whereof, as Wee are informed, hath been the cause that hitherto soe curious and lawdable a worke hath been neglected, aswell for the sole makinge and settinge forth of suche mappes and plottes, as of suche descripcons and bookes as hee shall devise or sett forth in waie of relacon, of anie the places hereafter mencōned within this Our realme and other Our domynions, for some reasonable tyme, to the end hee maie reape the fruites of his travell charges and expences to bee susteyned in and about the pmisses: Know yee, that We, graciously affectinge and approvinge the comendable indeavors of the said Aron, and for his better incouragement therein, that hee maie receive in recompence thereof the profitt of his labors, as reason requireth, of Our especiall grace, certaine knowledge, and meere mocon, and at the humble requeste of the said Aron Rathburne, haue given and graunted, and by theis psentes, for Vs, Our heires and successors, doe give and graunte vnto the saide Aron Rathburne, and vnto Our welbeloved subiect Roger Burges, their executors, administrators, and assignes, and theire or anie of theire deputies or assignes havinge authoritie from them in that behalfe, that they onelie and none others shall and may from tyme to tyme and at all tymes, for and duringe the terme of twenty and one yeares nexte ensuinge the date hereof, within this Our realme of Englande or anie other Our domynions, and everie or anie of them, at theire or anie of theire will and pleasure, make, describe, carve, and grave, or cause to bee made, described, carved, and graven, in copper, brasse, or other mettall, All suche and soe manie mappes, plottes, or descripcons of the foresaid cittie of London, and of the citty of Westminster, and the suburbs and adiacente partes of them or either of them, and of Our citties of Yorke, Bristoll, Norwich, Canterburie, Bathe, the twoe

Vniversities Oxford and Cambridge, and the town and Castle of Windsore, togeather with the suburbs and adioyninge places to them, or anie of them, as they or anie of them shall think most meete and conveniente, and the same, soe made, described, carved, and graven as aforesaide, to imprinte and settforth in paper, parchmente, cloth, or other materialls, and likewise to imprinte or cause to bee imprinted and sett forth all and all manner of descripcons and bookes which they or anie of them shall devise, make, or settforth for the better manifestinge of or describinge the saide citties and townes or anie of them, or for better vnderstanding of the said mappes, plottꝭ, or descripcons; And likewise to erecte and sett vpp in anie place or places within Our said realmes or domynions any engines or devises, and to vse any tooles or instrumentꝭ, necessarie for the makinge, gravinge, carvinge, imprintinge, or settinge forth of the saide mappes, plottꝭ, descripcons, and bookes, or anie of them, and the same, soe made and pfected, as well to vtter and putt to sale within theis Our domynions as to transporte out of this Our realme or anie other Our domynions into anie the partꝭ beyond the seas, or otherwise to dispose of the same, at theire or anie of theire free will and pleasure, and to theire most benefitt and profitt, during the said terme of twenty and one yeares, without the lett, hinderance, or interrupcon of Vs, Our heires or successors, or anie the officers or ministers of Vs, Our heires or successors, or anie other pson or psons whatsoever. Wherefore Our will and pleasure is, and Wee doe by theis ꝑsentes, for Vs, Our heires and successors, straightlie charge, ꝓhibite, and forbidd all and singuler bodies politique and corporate, and all and everie pson and psons, as well Our naturall borne subiectes, as aliens, denizens, and straungers whatsoever, other then the said Aron Rathborne and Roger Burges, theire executors, administrators, deputies, and assignes, and suche as shall by them or some of them bee sett on worke, lycenced, or authorized, that they or anie of them doe not ꝑsume, attempte, or take in hande, duringe the said terme of twentie and one yeares, to make, grave, carve, describe, imprinte, sett forthe, or counterfeit, or sell, vtter, or dispose of, within this Our realme or anie other of Our domynions, or exporte out of the same, the said mappes, plottꝭ, descripcons, or bookes, or anie of them, whereof the sole priviledge is hereby graunted to the said Aron Rathburne and Roger Burges, theire executors, administrators, deputies, and assignes, nor shall importe or bringe, or cause to bee imported or broughte, into this Our realme of England or anie other of Our domynions, or anie parte of anie of them, anie other the like mappes, plottes, descripcons, or bookes, or anie of them, duringe the said terme of twenty and one yeares, other then suche as shalbee made, graven, printed, pfected, and settforth by the saide Aron Rathburne and Roger Burges, theire executors, administrators, deputies, or assignes, or some of them; nor shall make, erecte, sett vpp, or frame anie engines or devises, or counterfeicte or vse anie tooles or instrumentꝭ for the makinge, gravinge, carvinge, or imprintinge thereof, vpon paine of forfeicture of all suche mappes, plottꝭ, descripcons, and bookes soe to bee counterfeicted, made, graven, carved, imprinted, soulde, vttered, imported, or exported, contrarie to the true meaninge of theis ꝑsentes, and vpon paine of forfeicture of all such engines, instrumentꝭ, tooles, and devises to bee framed, sett vpp, vsed, or exercised contrarie to Our meaninge herein expressed, and further vpon paine of Our heavy indignacon and displeasure, and of suche paines, penalties, and imprisonmentꝭ as by the lawes or statutes of this realme can or maie bee inflicted vpon the offendors for their contempt or disobedience in breakinge and contemning Our comaundement and prerogative Royall. And for the better execucon of this Our graunte, priviledge, and lycence, Wee doe by theis ꝑsentꝭ, for Vs, Our heires and successors, give and graunt full and free lycence, power, and authoritie vnto the said Aron Rathburne and Roger Burges, theire executors, administrators, and assignes, That they, the said Aron Rathburne and Roger Burges, theire executors, administrators, and assignes, by themselues or anie of them, or theire or anie of theire deputies, factors, servants, or assignes, shall and maie at all tymes and from tyme to tyme duringe the said terme, with the assistance of a constable or other officer, at conveniente tymes and in convenient and lawfull manner, goe on boarde anie shippe or other vessell, or enter into anie place or places where they or anie of them shall thinke goode within this Our realme or anie other of Our domynions, aswell within liberties as without, and there by all lawfull waies and meanes to enquire and searche for all suche plotts, mappes, descripcons, and bookes, And for suche frames, engines, devises, tooles

and instrumente, as by aniebody or bodies pollitique or corporate, or anie other pson or psons other then the said Aron Rathburne and Roger Burges, theire executors, administrators, deputies, factors, servants, or assignes, shall, within the said term of twentie and one yeares by theis ꝑsentes graunted, bee made, graven, carved, imprinted, described, sett-forth, vttered, sould, imported, exported, framed, erected, sett vpp, or vsed contrarie to the tenor and true meaning of theis Our L'res Patent, And alsoe in due manner to seize, take, and carrie awaie all and everie suche mappes, plotte, descripc̃ons, bookes, engines, tooles, and instrumente, which they or anie of them shall finde to bee made, carved, graven, imprinted, described, sett forth, vttered, sould, imported, exported, framed, erected, sett vpp, made, counterfeited, or vsed contrarie to the true meaninge hereof, the one moity thereof to bee to the said Aron Rathburne and Roger Burges, theire executors, administrators, and assignes, and the other moitye to be reserved to Vss, Our heires and successors, To have and to hould the said lycences, powers, priviledges, and authorities aforesaid vnto the said Aron Rathburne and Roger Burges, theire executors, administrators, deputies, and assignes, for and duringe the terme of twentie and one yeares from the daie of the date hereof nexte and imediatlie followinge, and fullie to bee compleate and ended: Provided alwaies, and Our will and pleasure is, that theis ꝑsentꝭ, or anie thinge therein conteyned, shall not extend to the ꝓuidice of anie pson or psons, bodies pollitique or corporate, for or conc̃ninge anie matter or thinge which they or anie of them, by force of anie other L'resꝭ Patentꝭ, graunte or grauntes by Vs, or anie of our noble progenitors or predecessors, Kinges or Queenes of this realme graunted, or by anie iuste or lawfull righte ought to have or enioy. And lastlie, Wee doe hereby for Vs, Our heires and successors, will and cõmaunde all Justices of Peace, Maiors, Sherriffes, Bailiffes, Constables, and all other the Officers, Ministers, and Subiects of Vs, Our heires and successors, to whome it shall or maie appertaine, that they and everie of them bee from tyme to tyme aidinge, helpinge, and assistinge to the saide Aron Rathburne and Roger Burges, theire executors, administrators, assignes, deputies, and servantꝭ in the execuc̃on of theis our L'resꝭ Patentꝭ, accordinge to the purporte, tenor, and true meaning of the same, as they tender Our indignac̃on and displeasure, and will avoid the same at theire vttermoste perills, although expresse menc̃on, &c. In witnes whereof, &c. Witnes Our Selfe at Westm̃, the Eleaventh Daie of March.

p bꝛe de priuato sigillo, &c.

From Letters Patent—**Rolls Chapel.**

A.D. 1617 . . . . N° 4.

WOLFEN AND MILLER.

Making Oil.

WEE doe therefore declare and signify Our expresse will and royall pleasure to be, and doe for Vs, Our heires and successors, straightly charge, ꝓhibite, and cõmaund all and every Our lovinge subiects, of what estate or condic̃on soever, and all and every other pson and psons whatsoever, That they or any of them shall not or doe not for and duringe the terme hereby graunted, by any wayes or meanes, directly or indirectly, attempt or ꝓsume to make or compound, imitate or putt in practise, the said invenc̃on and skill of makinge and compoundinge the said oyle or composic̃on of oyles for ꝓservinge and keepinge of armors and armes from rust, canker, and such like meanes of decay and perishinge, by the said John Gasper Wolfen and John Miller devised and invented as aforesaid, or shall vtter, sell, or putt to sale the same oyle or composic̃on of oyles within Our said realmes of England, Scotland, or Ireland, or domynions thereof, without the speciall lycence of the said John Gasper Wolfen and John Miller, or either of them, their, or either of their executors,

administrators, deputies, or assignes first had and obtayned in writinge in that behalfe, and that vnder the payne of the losse and forfeiture of all such oyle or composicon of oyles soe to be made, compounded, offered, or putt to sale contrarie to the intent and meanynge of these ꝑsentꝭ, and vppon the further penalty of forfeitinge to Vs, Our heires and successors, fortie shillingꝭ of lawfull English money for every quarte of the saide oyle or composicon of oyles soe to be made, compounded, offered, or putt to sale as aforesaid, by any or every such pson or psons as shalbe found to offend contrary to Our Royall ꝓhibicon in this behalfe. The one moity of which saide forfeitures our pleasure is shall come and be from tyme to tyme to the vse of Vs, Our heires and successors, and the other moity thereof shall come and be to the vse and benefitt of the said John Gasper Wolfen and John Miller and either of them, their and either of their executors, admynistrators, deputies, or assignes, or to the vse and benefitt of such other pson and psons as shall search, fynde out, and discover from tyme to tyme the offendor or offendors in the ꝑmisses. Witnes Our Selfe at Westm̃, the Third Day of November.

From Letters Patent—**Rolls Chapel.**

A.D. 1618. . . . . N° 5.

MURRAYE.

Making Sword Blades, &c.

JAMES, by the grace of God Kinge of England, Scotland, Fraunce, and Ireland, Defendor of the Faithe, &c. To all to whom these presentꝭ shall come, greetinge: Whereas in Our princelie consideracon of the necessarie vse of swordes, fauchions, skeynes, and rapiers, within Our realmes and dominions, aswell for priuate as for publicque service, Wee have founde yt behovefull in pollicie of state for Our owne honor and the good of the comon wealthe, that the most vseful and necessarie manufacture of makinge swordes blades, fauchions, skeynes, and rapier blades, by which alone whole townes and multitudes of people are maintayned in partes beyonde the seas, should be planted and cherished within Our realmes of England and Ireland, Our owne domynions affordinge all materialles therevnto belonginge as good and plentifull and rather better cheape than any other forraine kingdome whatsoever, by the establishinge of which so comodious and needefull a manufacture in these landes not only many of Our lovinge subiectes wilbe sett on worke and drawne from that habite of idlenes which is the bane of these comon wealthes to be imployed in honeste labors whereby to maintain themselves and doe good to others, but alsoe ourselves and Our lovinge subiectes shall for all private and publicke occasions be furnished at home of those most necessarie armes and weapons at cheape prices, without dependinge vppon the will of others whoe for the present have power in that particuler to give Vs false ware at deare rates, or vtterlie to disarme Vs at pleasure: And whereas Our trustie and welbeloved servante Thomas Murraye, Esquire, Secretarie to Our deare Sonne Prince Charles, at the greate costes and charges of himselfe and his friendes, and by their painfull labours and endeavors, hath lately founde out the trewe secrett of temperinge, workinge, and forginge the mettall whereof to make sworde blades, fauchions, skeines, and rapier blades, and all such like sortes of defensible weapons, and hath alsoe ꝓuided choise workmasters to sett vpp the trade of working & making sword blades, fauchions, skeines, and rapier blades, not yet in knowne voꝭ and practice within Our said domynions: And further, of Our more especiall grace, certen knowledge, and meere mocon, for Vs, Our heires, and successors, Wee doe by these presentes require, charge, and comaunde, aswell the Lord Chauncellor and Lord Keeper of Our greate Seale of England for the tyme beinge, and the Lord Chauncellor and Keeper of Our greate Seale of Ireland for the tyme beinge, as also the

Chauncellor of the Duchie of Lancaster for the tyme beinge, that they and every öf them respectivelie doemake or cause to be made vnto the said Thomas Murraye, his executors, administrators, and assignes, such and soe many, severall L'res Patentes, duplicatȩ, constatȩ, and exemplificaco̅ns, vnder the severall seales of Our said realmes of England and Ireland and either of them, and the seale of Our said Duchie or Countie Palatine of Lancaster, of and concerning all, singuler, or any the grauntes, articles, guiftes, authorities, libties, and other things in these presentȩ conteyned, to be had, taken, executed, and pformed in Our said realmes of England and Ireland, and the domynions of the same, and every of them, as they or any of them shall require.

From Letters Patent—**Rolls Chapel.**

A.D. 1618 . . . . N° 8.

CRUMPE.

Pipes and Instruments for Draining and Raising Water.

JAMES, by the Grace of God King of England, Scotland, France, and Ireland, Defendor of the Faith, &c. To all to whome these p̄sentȩ shall come, greeting: Wheras Our welbeloved subiect Robert Crumpe, att his great costȩ and charges, after many yeres industry, traveile, and practize, hath attained, invented, and found oute a c̄teine new way and meanes for the drayning and drawing of waters out of mynes, colepittȩ, and other minerallȩ, and for the raysing of waters farre above the vsuall height, for the s̄vice of townes, castles, and howses where the same is wanting and shalbe desired, with much lesse charge & with more facilitie and ease then heretofore hath beene knowne and practized by any others within our realmes or domynions: And whereas Wee are informed that the said drayning and drawing of mynes, myneralles, and colepittȩ, and raysing of waters aforesaid, is to be done and pformed by the vse of c̄teine engines and instrumentȩ by the said Robert Crumpe newly devised and found out as aforesaid, which are farre different and exceeding all engines, instrumentȩ, or devises heretofore found oute or vsed in or aboute the p̄misses (that is to say), by a c̄teine hollow trunk or pipe of one entire length to be made of tymber or leade, which is to reach from the waters that are to be drawne or raysed vnto the toppe or place where the same waters shallbe to vent or yssue forth, att the foote of which said trunck or pipe so made of entyre length as aforesaid, and in some other partȩ or places therof there are to be placed and fyxed c̄teine suckers, drawers, and other devises, and other engins of brasse, copper, or other mettall, and att the vpper part or end of the said trunk or pipe there are to be planted and placed severall peeces of tymber fyxed and framed together, wherein are likewise to be placed c̄teine suckers, drawers, and other devises, together with one or more wheele or wheeles with spindellȩ or cranckȩ of yron or brasse, whereby the waters shall and may be drawne or raised from any depth whatsoever by the labour of one or two men, without the use of horses to force or raise the same. And as for the raysing of waters for the services of castles, townes, or houses, the said frame, wheeles, and other engins before menc̄oed to be placed att the vpper part of the said pipe or trunck, may, as occasion shall serve, be sometymes placed att the bottome or lower part of the said trunk or pipe for the intent and p̄pose aforesaid: And whereas there are now in knowne vse and practize in this our realme c̄teine engines, instruments, and devises for the drawing and drayning of waters out of mynes, mynerallȩ, and colepittȩ, called or knowne by the name of chaine pumpes, co̅monly drawne or moved with horses or water wheeles or wynd milles, which cannot be mainteined and vpheld without the great and continuall charge and expence of our subiects that do vse the same: And whereas there are likewise in knowne vse and practize for the drayning and drawing of waters out of mynes, myneralles, and colepittȩ a c̄teine sort or kinde of engine made of severall pumpes, lengthes, or pieces to be placed one above another, till the vppmost piece or pumpe do reach vnto the top of the grounde or place where the

waters are to be vented or issued fourth, which said several pumpes, so placed one att the top of another, are to be drawne and moved by the strength and labour of horses or men, and are made and framed together with cteine wheels, cogge, ringe, and trundelle of yron, with buckette, clappes, and suckers, made of leather, wood, and yron, which likewise cannot be mainteined and kept withoute great and continuall charge and expence vnto Our said subiecte, and yet, nevertheles, the said several pumpes do all vent and yssue forth, but the water onely that is raised by the worck and mocon of the lowest pumpe onely, which is comonly but of small pporcon and quantitie: And whereas for the drawing and drayning of waters out of mynes, myneralles, and colepitte there are likewise now in knowne vse and practize a cteine sorte or kinde of pumpes called or knowne by the name of hand pumpes, which are comonly made of the several lengthes of ten, twelve, or syxteene foote, or thereaboute, which being placed each one of them vpon the top or head of another, with severall cisternes, troughes, or boxes vnto them annexed, by the labour and worcke of so many ~~e~~all men as there are severall pumpes there is raised vp from one pumpe to another such small pporcon or quantitie of water as the lowest pumpe placed in the said mynes, myneralles, and colepitte is able to raise and draw up, and no more, which likewise cannot be mainteined, vsed, and kept withoute a great and continuall charge, and the labour of many severall men, as aforesaid. Witnesse Ourselfe att Westm, the Nynth Day of Januarie.

From Letters Patent—**Rolls Chapel.**

A.D. 1818. . . . . N° 9.

GILBERT.

Water Plough for taking up Sands or Banks out of Rivers. Engine for raising Water.

These Letters Patent were surrendered and cancelled on the 7th day of November, in the 5th year of the reign of Charles 1st. (1629.)

JAMES, by the Grace of God, &c. To all to whom these psents shall come, greeting: Whereas Our welbeloved subiect, John Gilbert, through his greate industrie, trauaile, and charge in forraigne kingdomes and countries, hath attayned, inuented, and founde out a ctaine new engine or instrument called or termed a water plough, for the taking vpp of sand, grauell, shelues, or banckes out of the river of Thames, and other havens, harbors, riuers, or waters wherewith they are choaked, for the freer passage and safetye of shipps and other vessels: And whereas Our said subiect hath, at his like industrie, trauaile, and charges, inuented another engine or instrument for the raysing of waters in a greater quantitie and to a greater height then heretofore hath bin knowne or practised in these Our realmes, which said engin for raysing of waters is to be moued and driuen either by some current or streame of water, or for want thereof by strength of horses, and is verie necessarye for the drawing and drayning of coale pitts and other mynes. * * *

* * yielding and paying therefore vnto Vs, Our heires and successors, the yerelie rent or some of six poundes thirteene shillings and eight pence.

Prouided alwayes, that these psents or anie thing therein conteyned shall not extende to barr, restraine, impeach, or piudice a late graunte by Vs made to Robert Crompe for touching and concerning the sole making and practise of an engin by him inuented for raising of waters for seruice of townes, castles, or houses, and for the drawing and drayning of coale pitts and other mynes: And moreouer Wee, of Our like especiall grace, certaine knowledge, and meere mocion, doe, for Vs, Our heires and successors, giue and graunte vnto the said John Gilbert, his executors and assignes, one moyetie of all such treasure trove, plate, jewells, and other matters and things of vallue, as he or they shall take vpp by the vse and meanes of the said water plough out of any rivers, havens, or harbours as aforesaid.

From Letters Patent—**Rolls Chapel.**

A.D. 1620 . . . . N° 17.

SHARPE AND WILTON.

Making Chamletts.

JAMES, by the Grace of God, &c. To all to whome theis presentꝭ shall come, greeting: Whereas Wee are informed that Our welbeloved subiectes, Samuell Sharpe and Richard Wilton, cittizens of London, have, by theire industries and paines, after many experimentꝭ and with much expence, attained and founde out the misterie, feate, and skill of chambletting, or makeing chamlettꝭ of grogram, phillipp, and cheyney, and of sundrie other sortes of silke and other stuffes after the Turkie manner of chamletting, which is by them effected and done by the vapor or streame of water or other liquors, and by the helpe of the could presse, whereby the same chamlettꝭ or stuffes soe made into chamlett are made more beautiful to the eye and more serviceable and lasting in the vse and and wearing then the chamlettꝭ nowe commonly made in this Our realme, which for the most parte being done by meanes of the hott presse, are not safe and durable, but disguised, false, and counterfeit, to the great damage and deceipt of such Our subiectꝭ as doe vse the same.

From Letters Patent—**Rolls Chapel.**

A.D. 1621 . . . . N° 19.

MIDDLETON.

Draining Grounds.

JAMES, by the Grace of God King of England, Scotland, Fraunce, and Ireland, Defendor of the Faith, &c. To all to whome theise p̄sentꝭ shall come, greeting: Whereas Wee are given to vnderstand that Our welbeloved subiect, Hugh Middleton, cittizen and goldsmith, of London, hath to his very great charge maynteyned many strangers and others, and bestowed much of his tyme to invent a new way, and by his industrie, greate charge, paynes, and long experience hath devised and found out a new invencon, skill, or way for the wynning and drayning of many groundꝭ which are daylie and desperatelie surrounded within Our kingdome of England and dominion of Wales, and is now in very great hope to bringe the same to good effect, the same not being heretofore knowne, experimented, or vsed within Our said realme or dominion, whereby much benefitt (which as yet is lost) will certenly be brought both to vs in particuler, and to our comon wealth in generall, and hath offered to publish and practise his skill amongest our loving subiects, and hath therevppon made and exhibited his most humble suite and peticion vnto Vs according to Our accustomed goodnes for the furtherance of so p̄fittable and necessary a worke, and for his better incouragement in this kind of imployment, to graunt vnto him Our L'res Patentꝭ for the space of fowerteene yeares, both to enable him in the said worke, and also to p̄hibite and restraine all others without his lycense from p̄forming or vndertaking the same after his manner, whereby the said Hugh Middleton may reape some fruite of his owne labors and industries therein as is fitt, and recompence himselfe of the costꝭ, charges, and expences which he hath susteyned or shall susteyne or be att about the said devices or invencons, and the making and putting in vse thereof: Knowe yee that Wee, tendring the weale of this

Our kingdome and the benefitt of Our subiects, and out of Our princely care to nourish all art, invencions, and studdies whereof there may be any necessary or ꝑfittable vse within Our dominions, and out of our desire to cherish and encourage the industries and paynes of all other Our loving subiectꝭ in the like laudable indeavors, and to recompense the labors and expences of the said Hugh Middleton disbursed and to be susteyned as aforesaid, and for the good opinion Wee have conceived of the said Hugh Middleton for that worthy worke of his in bringing the New River to our cittie of London, and his care and industrie in busines of like nature tending to the publicke good, and for other good consideracions Vs hereunto moving, of Our espiciall grace, certaine knowledge, and meere mocion have given and graunted and by these ꝑsentꝭ for Vs, Our heires and successors, doe give and graunt full, free, and absolute licence, libertie, power, and authoritie vnto the said Hughe Middleton, his deputies, substitutes, and assignes, that they and every of them, their and every of their executors, administrators, and assignes, deputies, substitutꝭ, servantꝭ, workemen, and agentꝭ, and none other shall and may at all and every tyme to tymes, and from tyme to tyme during the terme of fowerteene yeares next ensuing the date hereof, att their and every of their liberties and pleasures within this Our realme of England and dominion of Wales, and the port and towne of Barwicke, or any of them, use, exercise, practise, and putt in vre the said art, skill, mistery, knowledge, feate, and way, which hath bene or shalbe first invented and made knowne within Our said realme and dominion by the meanes and industrie, or att the ꝑper costꝭ and charges, of the said Hugh Middleton, for the wynning or drayning of any groundꝭ surrounded or overflowen with water, and to that end and purpose to provide, make, erect, build, and sett vpp such and so many engines, instrumentꝭ, or devises as by the said Hugh Middleton, his deputies and assignes, and his and their executors, administrators, deputies, servantꝭ, and assignes, or any of them, have byn or during the said terme shalbe first invented and devised, and the same to vtter, sell, or otherwise dispose of, att their or any of their will and pleasure, and for his and their best benefitt and advantage. And to the intent the said Hughe Middleton, his executors, administrators, and assignes, may have and enioye the full benefitt of all and every the licences, liberties, powers, and authorities aforesaid, Wee doe by theise ꝑsents for Vs, Our heires, and successors, graunt vnto him and them and every of them, That it shall and may be lawfull to and for the said Hugh Middleton, his executors, administrators, and assignes, and every of them, att all tymes hereafter during the said terme of fowerteen yeares, with a constable or other officer of the pish or place respectivelie, at all tymes convenient to enter and goe into any house or houses, landꝭ, groundꝭ, or other place or places, to search and see if any sort or kinde of engins or instrumentꝭ be or shalbe made, devised, erected, sett vpp or vsed within Our said realme and dominions, or any of them, contrary to the tenor hereof, and also seise and make confiscate and to take and carry away all and every such engins and instrumentꝭ soe found or to be found to be made or vsed, and the same and every of them whollie to deface and pull down: To have, hold, vse, exercise, practise, and putt in vre and enjoy, all and every the said lycenses, libties, powers, priviledges, imunities, and authorities, and all and singuler other the ꝑmisses and thingꝭ herein before mencõned to be hereby given and graunted, and every of them, vnto the said Hugh Middleton, his executors, administrators, and assignes, from the date hereof, for, during, and vntill the full end and terme of fowerteene yeares from thence next ensuing, and fully to be complete and ended: Provided alwaies, that if the foresaid invencions hereby mencioned to be priviledged, and by the said Hugh Middleton, his executors, administrators, or assignes to be putt in vre and practise, have bene knowne and put in practise before the date of theise ꝑsentꝭ within Our said kingdome and dominions, or any of them, otherwise then by the meanes or industry, or att the ꝑper costꝭ and charges, of the said Hugh Middleton, that theise Our L'res Patentꝭ (so farre forth as to the said invencions so knowen and putt in practise) shalbe void and of none effect, and in the residue notwithstanding good and sufficient in lawe, anythinge herein likewise conteyned to the contrary notwithstanding.

From Letters Patent—**Rolls Chapel.**

A.D. 1624 . . . . N° 29.

WILLIS AND CRUMPE.

Three Engines for Draining Mines and Raising Water.

AND WHEREAS We are informed that the said drayning and drawing of mines, minerall℄, and colepitt℄, and rasing of waters as aforesaid, is to be done and pformed by the vse of certen engines and instrument℄ by the said Richard Willis and Robert Crumpe devised and found out as aforesaid, which are farre different and exceeding all engines, instrument℄, and devises heretofore found out or vsed in or about the p̄misses, that is to say, for the dryning and drawing of waters out of tinne pitts, leade workes, colepitt℄, and other mines and minerall℄, such one of these three engines here described as will best fitt the worke and place where it is to vsed, videl', the first of the said engines is to be made with a certen hollowe truncke or pipe of one entire lenght of timber or lead, which is to reach from the waters that are to be drawen or raised vnto the topp or place where the same waters shalbe to vent or issue forth, at the foote of which said truncke or pipe a cestern or coffer is to be placed, with certen barrell℄, buckett℄, and suckers, through which, by one or more rodd℄ or polles to be moved vpp and downe, the water shalbe drawen, sucked, or forced into the said pipe, and either at the topp or other parte of the pipe are to be placed sc̄all peeces of timber, framed together, with one or more wheeles or wheeles, skrewe or skrewes, sowle or sowels, spindles, and of iron or brasse leavers, or some or anie of them, for mouing the said rodes or poles and working vpp the waters into the pipe from the bottome to the topp, where the same shalbe to be vented; the second engine is to be made likewise with a pipe or pipes of lead or timber, of one or more lengths, which shall reach from the bottome where the bed of the watters lieth, either by streight or crooked passages as the worke shall require, to the place or places where the said waters shalbe to vent, and by placing at the bottome of such pipe or pipes a cestern or coffer with barrell℄, buckett℄, and suckers, through which the waters shalbe drawen, sucked, or forced by an engine or deuise to be framed and sett vpp either belowe or at some other parte of the pitt, with timber, wheele, skrewes, sowles, leavers, spindels, crankes, and other deuises for mouing such rodd℄ or poles, whereby the waters shalbe wrought into and by the said pipe or pipes to the place where the same shalbe vented. The third engine is to be made with one straight pipe of leade or timber from the topp to the bottome, the same to be placed within another pipe or truncke of timber or lead in form of a case, to stand hollow or rounde about it from the bottome to the topp, and by placing both at the bottome and the topp certen barrell℄, suckers, drawers, buckett℄, and engines, and at the topp or other part of the pitt certen wheeles, skrewes, sowles, spindels, crank℄, and other deuises for working vpp, forcing, and drawing the said waters from the bottome to the place where the same shall be vented; by everie of which engins and deuises the waters shall and may be drawen or raised from any depth by the labor and worke of fewer men or horses, with more facillitie and ease and lesse charge then ever the like weight and depth of waters have bene wrought and drained by anie other engines before; and for raising of waters for the service of castles, townes, or houses, one of the like engines to these before discribed is to be used with little variac̄on either by placing the moving parte of the worke thereof at the topp or below at the bottome. In which case also if the water be to be drawen from anie river or greate spring the labour and worke of men or horses may be supplied by a water wheele, to be driuen about by the water of the river or spring if the streame and conveniencee of situac̄on will beare and admitt it.

From Letters Patent—**Rolls Chapel.**

A.D. 1624 . . . . N° 30.

WEBBE.

Making Oil.

JAMES, by the Grace of God King of England, Scotland, Fraunce, and Ireland, Defendor of the Faith, &c. To all to whome those ꝑsentꝭ shall come, greeting: Whereas Our welbeloued subiect, Benedict Webbe, of Kingswood, in Our countie of Wiltes, clothier, having in his travaile beyond the seas, about twentie yeares last past, observed a kinde of oyle to be made of rapeseed and other smale round seedes for the vse of clothing, and vppon manie chargeable triallꝭ and endeavors continued almost euer since hath now at last attained to the pfect art and skill of making the said oyle of rape seede and other smale seedes aforesaid, which oyle, vppon triallꝭ thereof made by manie clothiers of Our coũties of Wiltes, Glouccster, and Somersett, is found far better for the vse of clothing then that which hath been yeerely bought out of the Low Countries, and as vsefull as the Spanishe oyle yeerely imported into this Our kingdome of England, and bought att deere rates and prices, for the vse of the finest sort of clothes. By which manufacture and invencion of making the said vsefull oyle of seedes at home within our owne dominions the whole drapie of this Our kingdome may be in shorte time supplied with fitting oyle for clothing without the helpe of anie oyle from forreine partes, and cheaper rates then are now paid for the same; besides the setting of manie of our poore subjectꝭ on worke, and the great enriching of much barren land in this Our kingdome, for that the said oyle seedes doe best ꝓsper vppon drie and sandie groundꝭ, which, being otherwise of small vse and pfitt, will, after some few yeeres imploym^{t} in tillage for the said oyle seede, become fruitfull for corne, and giue good retorne to the husbandman.

From Letters Patent—**Rolls Chapel.**

A.D. 1625 . . . . N° 31.

KNAPPE.

Making Coaches, Carts, and other Vehicles.

CHARLES, by the Grace of God, &c. To all to whome these ꝑsntꝭ shall come, greetinge: Whereas Our welbeloved subiecte, Edward Knappe, hath by his owne studie, charge, and industrie found out and invented divers newe wayes and meanes by which coaches, caroaches, cartꝭ, and other carriagꝭ maie be made to last and contynue longer to goe with more ease to the parties that shall vse them, and the beastes that shall drawe them, and be kept and maynteyned with lesse charge then such like have heretofore beene in the ordinarie courses formerly vsed; that is to saie, by makinge the axeltrees of iron, brasse, or steele, either of one length fixed to the one wheel and boxed in the other, or of two lengths fixed severally in either wheele, and boxed vnder the bodie of the carriage, whereby all charge of clowting wilbe saved, and the wheeles and axeltrees to be soe placed and contrived as in an instant of tyme the wheeles maie be shutt closer together where the narrowness of the waie shall require itt, without anie daunger, or to be enlarged and sett wyder, as shall be most safe and easey for the passenger, and with a devise whereby the coachman, without comyng from his boxe, shall in anie descent of grounde keepe the hinder wheeles from turninge, soe

as the carriage shall goe downe hill with noe more hurt or danger to the passingers or horses then in playne ground, as alsoe by hanginge the bodie of the coach or caroach to the carriages by two springes of steele before and two behinde, for the more ease of the trevellor, and saving the dayly charge of grease by vsinge oyle in steede thereof, and keepinge the horses and other beastes from gallinge their bodies with their geares, and makinge them drawe att more ease and with more strength by the helpe of newe invented collors of plate of iron or steele, and by raysinge the harnes higher than in the ordinarie course of drivinge. And the said Edward Knappe doth for hym, his executors, administrators, and assignes, covenaunt, ꝑmise, graunte, and agree to and with Vs, Our heires and successors, by these presentꝭ to paie vnto Us, Our heires and successors, att the receipt of the exchequer, the yearely some or rente of fortie shillingꝭ of lawfull money of England.

From Letters Patent—**Rolls Chapel.**

A.D. 1629 . . . . N° 48.

FRANCKE.

Instrument for Draining.

CHARLES, by the Grace of God Kinge of England, Scotland, France, and Ireland, Defendor of the Faith, &c. To all to whom theis ꝑsentꝭ shall come, greetinge: Whereas Our welbeloved subiect, Captaine Thorneffe Francke, hath by his longe and greate travaile and industry, and after many chargeable experymentꝭ, found out and pfected an engine, instrument, or devise not heretofore put in practise by any within Our realmes or domynions, consisting of divers and severall wheels and shivors sett in a frame of tymber, which goeth downe to the bottome or lower parte of the worke where it is to be vsed, either by a tread-wheele meanes, handꝭ, horses, water, or otherwise most fitt and necessary for the drayning of mynes or lowe groundꝭ, and expediting of buildingꝭ and other vses tending to the publique good, ease, and benefitt of Our realmes and our subiectꝭ thereof. Witnes Our Selfe at Canbury, the Thirtieth Day of July.

From Letters Patent—**Rolls Chapel.**

A.D. 1636 . . . . N° 51.

BALL, LASSELLS, HAMPTON, AND AULEY.

Use of Peat for Making and Burning Iron, &c.

CHARLES, by the Grace of God King of England, Scotland, Fraunce, and Ireland, Defendor of the Faith, &c. To all to whome theise presentꝭ shall come, greeting: Whereas Our welbeloved subiectꝭ, Edward Ball, Edmond Lassellꝭ, Esquiers, Robte Hampton and William Auley, gent., have by their humble petic̃on enformed Vs that they, applyeing their time, travaile, and money to the benefitt and profitt of the common wealth, have endeavoured and found out the meanes soe to prepare and order the fuell of peate or turffe by reduceing into a coale, that it shall serve for the makeing, melting, forging, and fyneing of iron, lead, and tynn, and for boyleing of salt, and for the burning of bricke, tyle, and

lyme, or any other thing whatsoever, for building or otherwise, to be made of earth, without the addicon or vse of any wood, charcoale, pitcoale, or seacoale, an invencon wch was never brought to perfeccon by any other heretofore within Our realme of England, and which may tend to the inestimable good of this Our whole kingdome in the spareing and preserving of wood and coale, and which in all likelyhood may produce more happy effectꝭ hereafter, both for the improvement of ground from whence the peate is to bee taken, as alsoe for the imployment and setting on worke greate numbers of poore and distressed people.

From Letters Patent—**Rolls Chapel.**

A.D. 1630 . . . . N° 53.

RAMSEYE.

Separating Gold or Silver from Tin, Lead, and Copper.

CHARLES, by the Grace of God King of England, Scotland, France, and Ireland, Defendor of the Faith, &c. To all to whome these presentꝭ shall come, greeting: Whereas We have been informed by the humble peticon of Our trustie and welbeloved servant, David Ramseye, Esquire, on the behalfe of himselfe and his partners, that by severall Letters Patentꝭ vnder the greate seale of England, severall grauntꝭ and demises have bin heretofore made of all Our mines of copper, tinne, and leade within this Our realme of England (excepting onely Our mines royall), and that graete inconvenience and ꝑiudice doth and may thereby arise to Vs and Our Crowne in regard the severall patentꝭ for want of experience to make a separacon of the mettalls of the saide mynes, doe dayly cast awaie and lose much of those mynes which conteyne in them gould or silver, and doe not distinguish which are mynes royall and which are not, and hath allsoe enformed Vs that hee, the saide David Ramseye, and his associates, have found out and perfected a new invencon, waie, or meanes to make sepacon by takinge of the seacond seume of all such mettalls of tinne, leade, and copper, after the drosse is taken, and preserving aswell the impure mettall as the pure, which shalbee soe done by them, without preiudicing any of our subiects patentes, or others whatsoever whome it may concerne, and is an invencon not haveing bin heretofore put in practise within this kingdome or dominion of Wales.

From Letters Patent—**Rolls Chapel.**

A.D. 1634 . . . . N° 71.

ROTSIPEN.

Instruments for Cutting, Polishing, Filing, Turning, Boring, Grinding, Sawing, and Planing Metals, for Cutting Screws, for Making Files and Bullets, for Making and Rifling Barrels, for Pressing or Printing, and a Hammer moved by Water or Horse Power.

CHARLES, by the Grace of God Kinge of England, Scotland, Fraunce, and Ireland, Defender of the Faith, &c. To all to whome these presentꝭ shall come, greetinge: Whereas Our servant, Arnold Rotsipen, hath informed Vs that he hath invented manie engines and instruementꝭ fitt for Our service, which are hereafter specified, that is to say, to forme and to polishe all manner of opticall sections, whether concave, convex, or mixed, cliptique, parobolique, hiperbolique, or sphericall, of iron, of steel, or of anie other mixed mettalls, hard or softe, much better and in shorter tyme then can be done by hand or by anie knowne

meanes hereto vsed: Two engins to cutt or to shave iron or steel, playne, sphericall, mixed, or of anie other shape, with such mouldinge, crestę, ringę, and other ornamentę, as joyners, stonecutters, or other artificers doe vse, as exactly as anie workeman, and in lesse tyme: Two engines to cutt screwes of silver, brasse, iron, or steele, from one inche in diameter to three foote or more, and the thredę or teeth of those screwes of proporconable depth, as well the concave as the convex or solid, two wayes: To cutt or to worke out anie shape or forme that shall be required only by houlding the iron or steele to the instrument: To cutt wheeles with such teeth as shalbe requisite for all manner of engines, greate or small, more exactly and in farre shorter space then can be done by hand, two wayes: Three severall engines instrumentallie to fyle all manner of worke with lesse paynes, iuster, and in shorter tyme then can be done by hand: To turne, not onlie by scrapinge as other turnes for brasse or other mettalls doe, but by cuttinge iron and steele into anie kynde of forme or worke that hath beene or may be turned: To bore iron, steele, or other mettalls six severall wayes, rough or smooth pearched, and in the whole metall, greate or small, as the carpenter or joiner doeth wood: To cutt plates or thicker peeces of iron or steele with more ease and speede then with sheeres, two wayes: Att once to ymprint or to peirce trianguler, quadrate, rounde, or anię other figures into or through iron or steele, and of any requisite bignes, in two manners: To cutt fyles, greate and small, course, fyne, and smooth, rounde, halfe rounde, trianguler, square, or of anie other shape, two severall wayes: To make bullettę or globes of iron, steele, stone, glasse, or of anie other materiall, great or small, in three severall manners: To drawe or to shave barrells for peeces of all sortes, straight, even, and smooth, within two severall wayes: To make anie crooked barrell perfectly straight with greate ease: To rifle, cutt out, or screwe barrells as wyde or as close, as deepe or as shallowe, as shalbe required, and with greate ease: To grinde all manner of formes and figures of iron, steele, or any other mettalls or materialls, fower severall wayes: To polishe iron, steele, or other materialls fower severall wayes: Two manners of sawinge brasse, iron, steele, or other materialls: Two wayes to plane or to make iron, steele, or other mettall exactly flatt, levell, and smooth: A pressinge or printinge engine, with wheeles and rolls, after his peculiar manner: A hamer mill and engine, movinge by streame of water or by horse, to strike with as much moderacon, hard or softe, as it vsed by hand, though the first mover contynue in the same swiftnes: And that the same instrumentę and engines are all of his owne invencon, and not formerly vsed by anie other within this realme, and hath humbly besought Vs to graunt vnto him a priviledge for the sole makinge of the said instrumentę and engines, prohibiting all others to make vse of anie of the saide engines or instrumentę by him invented, and not hitherto practised by anie other, nor as yet by Our saide servant exposed to the viewe of anie, but only of Our Selfe and of such as Wee have especially deputed therevnto, the pticuler composicons and vses whereof shall appeare as they shalbe framed and sett vpp at Our storehowse in the minoritę, there to remayne for Our peculiar service.

From Letters Patent—**Rolls Chapel.**

A.D. 1634 . . . . N° 73.

BULMER.

Raising Ships and Goods sunk in the Sea.

CHARLES, by the Grace of God Kinge of England, Scotland, Fraunce, and Ireland, Defender of the Faith, &c. To all to whom these ꝑsentę shall come, greeteinge: Whereas Our welbeloved servant, John Bulmer, Esquire, master surveyor of Our mynes, mineralls, and engins for waterworkę, by his humble peticon to Vs exhibited, hath informed Vs that hee, by his maine yeares travell into forreigne partę, hath attayned to the extraordinarie knowledge of engins, and of the arte and misterie therevnto belonginge, as by certificate of most princes of Christendome, vppon approved experimentę with them hee can demonstrate,

and hee beinge resolved, with Our gracions favour, to spend the remaynder of his tyme for the scrvice and benefit of Vs and his native country, and to yeald the fruitꝭ of those flowers hee hath paynfullie gathered abroade to his mother country, where hee tooke his first life, and therefore hath humblie prayed Vs to graunt vnto him Our Letters Patentꝭ of priviledge for the sole vseing of his owne engines and invenc̃ons for the takinge vpp of shipps and goodꝭ suncke in the sea, and vseing them according to his own wayes, within Our seas and dominions, according to the lawe in that case established.

From Letters Patent—**Rolls Chapel.**

A.D. 1634 . . . . N° 75.

PRUSEN AND STRACHY.

Stoves or Furnaces for Drying and Heating.

CHARLES, by the Grace of God, &c. To all to whome theis p̃sents shall come, greeting: Whereas Our welbeloued subiects, John and Jacob Drebble, and Abraham Rusfeler, and Anne his wife, the sonnes and daughter of our late servant, Cornelius Drebble, deceased, by theire humble petition to Vs exhibited, haue informed Vs that the said Cornelius Drebble having in his lyfe tyme, by his industry and by his great paynes, costs, and chardges, devised and found out and also brought to pfection c̃tayne stoves and furnaces of yron, of brickworke, and of earth, very comodiouse, and fitt for heating of water or any other liquor, making of salt out of salt water alone, or of salt vpon salt, for the heating of any roomes in dwelling houses or any household affayres, or hot howses for the drying of saffron, hoppes, fruites, sweet meates, gunnes, gunpowder, saltpeter, or the like, and of mault or any other kynde of grayne, to be donne with seacole, charcoale, peate, turfe, or any other kynde of fewell, and that the said stoves and furnaces doe convey both the heate and smoke thereof soe secretly and soe safely, that noe daunger or annoyance can happen to be, either in regard the heate may thereby be increased, moderated, or abated to any ꝓporcion or degree that shalbee held most fitt or requisite for any the vses aforesaid, with much lesse charge, shorter tyme, lesse attendaunce, and without any touch of smoake, and of fayrer hue and much sweeter, both for smell and taste, then heeretofore hath bin donne by any other: And whereas the said peticioners haue humbly besought Vs, in regarde theire said father was the first inventor of the said stoves and furnaces, and that hee dyed before he made any vse or benefit thereof, and wasted his estate so much thereon that he left them little or noe means of lyvelihood: That Wee would be pleased to confirme vnto them or such as they should noīate in trust for them, and for their benefitt, Our gracious priuiledge for the sole making, erecting, and vsing of the said stoves and furnaces within Our realme of England, dominion of Wales, and kingd̃ome of Ireland, for the space of foureteene yeres, with ꝓhibicion to all others to make or vse the same within Our said realmes and dominions during the tyme of the said graunt, reserving to Vs the yeerely rent of forty shillingꝭ: Know ye that Wee, g̃ciously enclyning to geve encouragement to Our loving subiects in theire honest and industriouse waies, tending to such good purposes as aforesaid, of Our esp̃all grace, c̃teyne knowledge, and meere mocion, have geven and graunted, and by theis p̃sents for Vs, Our heires and successors, doe give and graunt, att the humble sute and ñoiac̃on of the said peticioners vnto Our servant, Hildebrand Prusen and Howard Strachy, theire executors, administrators, and assignes, full and free liby, licence, power, priuiledge, and authoritie that they, the said Hildebrand Prusen and Howard Strachy, theire executors, administrators, and assignes, by themselves or their deputies, servants, factors, or workemen, and none other, shall and maie at all and every tyme and tymes heereafter, from tyme to tyme during the terme of fourteene yeres next ensuyng the date of theis p̃sents, at theire owne proper costꝭ and chardges, vse, ex̃cise, practyse, and put in vse the art or mistery of making the said stoves or furnaces of iron, of brickwoorke, and of earth, as aforesaid.

From Letters Patent—**Rolls Chapel.**

A.D. 1635 . . . . N° 78.

RAMSEY, ARNOLD, AND AYLIFFE.

Heating Brewing Vessels, Drying Bricks, Tiles, &c., with less Fuel and Smoke.

CHARLES, by the Grace of God Kinge of England, Scotland, France, and Ireland, Defender of the Fayeth, &c. To all to whome theise p̄sentꝭ shall come, greetinge: Whereas Wee have beene gyven to vnderstand by the humble petic̄on of Our welbeloved and faithfull servaunt, David Ramsey, Esquier, one of the groomes of Our Pryvie Chamber, Michaell Arnold, and John Ayliffe, of the citty of Westminster, brewers, That they, by theire paynes, industry, and great charges, have invented, found out, and pfected a very profitable way and meanes never yet practiced in any of Our domynions, aswell for the well boylinge of greate breweinge vessellꝭ of liquor houldinge threescore barrellꝭ more or lesse, and other greate vessellꝭ vsed by dyers, soapeboylers, salte makers, salte peter makers, &c., with halfe the fuell they nowe spende, as alsoe for the removall and takeinge away of the greate annoyeance of smoake which ariseth from brewhouses, dyehouses, &c.; and that the same invenc̄on is alsoe very vsefull for the dryeinge of bricke, all manner of tyles, and all such sortes of tyles as cannot bee made in this kingdome but in the heate of sum̄er. And alsoe that they have found out the arte and skill of makeinge and dryeinge of all sortes of panne tyles, stone juggꝭ, bottles of all sizes, earthen wicker bottles, meltinge pottꝭ for gouldsmyths, and other earthen com̄odityes within this Our realme, which nowe are made by straungers in forraigne partes, and that by the makeinge of the same earthen com̄odityes as aforesaide the saide David Ramsey, Mychaell Arnold, and John Ayliffe shall have employment for many of Our poore subiectꝭ, whoe thereby shalbee sett on worke and be competently mainteyned, and will alsoe sell them cheaper then they are nowe sould.

From Letters Patent—**Rolls Chapel.**

A.D. 1635 . . . . N° 83.

FRANCKE.

Furnaces for Melting and Smelting Copper, Tin, &c., with less Fuel.

CHARLES, by the Grace of God King of England, Scotland, Fraunce, and Ireland, Defendor of the Faith, &c. To all to whom theis p̄sentꝭ shall come, greetinge: Whereas We are given to vnderstand by the humble petic̄on of Our welbeloved subiect, Captayne Thornefe Francke, That vpon an overture formerlie p̄sented vnto Vs by him for the saueing of fuell, labour, ireon, and tyme heretofore vnnecessarily spent and consumed by brewers, dyers, sope boylers, salt makers, and others of like nature, whereby alsoe the annoyance of smoake is much avoyded, wch vpon triall thereof made hath beene well approved; and that to reward his indeavours and service therein, Wee haue graunted him for a tearme of yeares the benefitt of his sayd invenc̄on by L'ers Patentꝭ of priviledge of the seacond of November, in the nynthe yeare of our raigne, sithence wch tyme the sayd invenc̄on, being found com̄odious and convenient, is generally allowed of and vsed, to the greate benefitt of our people and the p̄servac̄on of wood, fewell, and iron: And whereas the sayd Captayne Thornefe Franke, by his sayd petic̄on, hath further humbly shewed vs, that great

abundance of tymber, wood, cole, and other fewell is now vsed and consumed within Our dominions in melting of all sortꝭ of mineralleꝭ, as copper, tynne, lead, iron, glasse, and other thingꝭ, and in the melting of mettalls for the casting of all sortꝭ of ordinance, and in iron mills and furnacies for the same, and also in glasse houses and in kylnes for makeing brickes, tyles, earthen pottꝭ, and lyme, to the great and vnnessarie destrucc̃on and decay of tymber, wood, coale, and other fewell; the said petic̃oner by his invenc̃on being well able to melte all sortꝭ of theise myneralls and mettalleꝭ without either water blaste or foote blaste, with saueing more than a full third parte of the tymber, wood, coales and fewell now vsed therein, and with much lesse labour and farre shorter tyme, whereby alsoe the great quantityes of ground now vsed for theire pondꝭ, and the abundance of tymber now spent in makeing of theire dammes and pond headꝭ, and continuall expence of tymber in mayneteyning of them and theire water courses, will be spared in great proporc̃on, and the labour for carrying their materialleꝭ to melting, and the annoyances of the high wayes thereby occasioned, shalbe alsoe prevented or much lessoned, and the vnnessarie consumpc̃on and wast of tymber, wood, and coale much saued, for Our honour and the benefitt of theis Our realmes and dominions; and therefore hath humbly besought Vs to be pleased, by Our L'ers Patent under the great seale of England, to graunt vnto him the sole use and benefitt of his said invenc̃on throughout our realmes of England, Ireland, and other Our dominions, with prohibic̃on to all others to vse the same for fouerteene yeares, yielding unto Vs full three partꝭ in tenne of all benefitt or gayne he shall hereafter dureing the sayd tearme make or receaue by the same, wᶜʰ sayd device and invenc̃on of the said Thornefe Francke is effected and donne by altering the formes of the melting furnacyes, and by contracting the ayre and causing and bringing in wynd into the sayd furnacies, wᶜʰ shall make the fyers burne with as much vyolence as any blaste whatsoever, as Wee are informed.

From Letters Patent—**Rolls Chapel.**

A.D. 1635 . . . . N° 87.

JEROME.

Machine for Cutting Scale-Board.

CHARLES, by the Grace of God Kinge of England, Scotland, France, and Ireland, Defender of the Fayeth, &ᶜ. To all to whome theise p̃sentꝭ shall come, greeting: Whereas Our welbeloved subiecte, Sarah Jerome, widdowe, administratrix of the goodꝭ of John Lane, deceased, by her humble petic̃on to Vs exhibited, hath informed Vs, That whereas the saide John Lane, being by profession a joyner, did with his greate charge invent an engyne for the cutting of tymber into thynne peeces, called scales, for the makeing of band boxes, skabberdꝭ of swordꝭ, and the like very vsefull for the com̃on wealth, but by reason of his greate charges in perfectinge the same engyne, and some losses that befell him, the saide Lane became indebted to the saide peticoñer and diverse other persons, and aboute three yeares since died soe indebted, leaveing noe estate or meanes to satisfie his debtꝭ, but only the saide engyne; the saide Sarah Jerome, vpon hope and encouragement of receaveing some benefitt by the said engyne towardꝭ the satisfieing of her owne debte and of the reste of the creditors, did take forth l'res of administrac̃on of the goodꝭ of the saide John Lane, and hath therevp̃on beene enforced to expende and disburse a hundred markꝭ or thereabouteꝭ in recoveringe the said engyne out of the handꝭ of one William Burrowes, to whome the same was morgaged for debte; wherevp̃on shee hath humbly petic̃oned Vs, that for the better enabling of her to raise some benefitt by the said engyne for the satisfieing of the saide Lane's debtꝭ, Wee would bee graciously pleased to graunt vnto her Our L'res Pattentꝭ of

priviledge for some terme of yeares, for the sole exerciseing of the saide engyne soe invented by him the saide John Lane. Knowe yee that Wee, graciously favouring and willing to encourage our subiecte in all lawfull artꝭ and invenc̃ons which may be of good vse and benefitt to Our people, and the better to enable the saide Sarah Jerom, as well to receave and recover the debte due to her from the said Lane as to make payment to the reste of the creditors of the saide Lane of theire iuste debtes out of the profittꝭ that shee shall rayse and make by meanes of the saide engyne, of Our especiall grace, certayne knowledge, and meere moc̃on have given and graunted, and by these p̃sentꝭ for Vs, Our heires and successors, doe give and graunte, vnto the saide Sarah Jerome, and, att her humble nomynac̃on and requeste, vnto William Webbe, theire executors, administrators, and assignes, full and sole lycence, lybertie, power, priviledge, and authoritie, that they, the saide Sarah Jerome and William Webb, their executors, administrators, and assignes, by themselves or by theire deputyes, servauntꝭ, or workemen, att all tymes and from tyme to tyme hereafter, for and dureing the terme of fourteene yeares by theise p̃sentꝭ graunted, shall and may lawfully make, vse, exercise, and putt in practice the saide engyne by the saide John Lane soe devised, invented, and found out as aforesaide, and shall or may have and take all such benefitt and advantage as shall or may lawfully bee had or made thereby.

From Letters Patent—**Rolls Chapel.**

A.D. 1635 . . . . N° 88.

ROSSE AND ROBERTS.

Making White and Red Lead.

CHARLES, by the Grace of God King of England, Scotland, France, and Ireland, Defender of the Fayth, &c. To all to whome theise p̃sentꝭ shall come, greeting: Whereas Wee are gyven to vnderstand by the humble petic̃on of our welbeloved servaunt, James Rosse, one of the pages of Our bedchamber, and of Our welbeloved subiecte, Alexander Robertꝭ, gentleman, That they, haveing observed the greate losse which redoundeth to Vs and this Our realme by the newe accustomed manner of makeing redd and white lead, both by destrucc̃on of the sylver conteyned in the leade out of which the saide white and redd leade hath formerly beene made and alsoe by the nowe vsuall manner of glazing of earthen ware with leade, have by theire travayle and charge found out and practized a newe way of makeing of redd and white leade, and glazing earthen ware with lytharge, out of which the silver is firste extracted, beeing an invenc̃on not heretofore practised by any but by them or one of them, or by theire or one of theire direcc̃ons, by meanes wherof much silver will bee saved, the leade alsoe p̃served, and a greate parte of the fewell formerly spente therein will bee spared.

From Letters Patent—**Rolls Chapel.**

A.D. 1636 . . . . N° 97.

STONE.

Making Swords, &c.

CHARLES, by the Grace of God Kinge of England, Scotland, France, and Ireland, Defender of the Fayeth, &c. To all to whome theise p̃sentꝭ shall come, greeting: Whereas in Our princely considerac̃on of the necessary vse of swordꝭ, fauchions, skeynes, and rapyers within Our realmes and domynions, aswell for private as for publique service, Wee have

found itt behoofefull in policie of state for Our owne honnor and good of the comon wealth that the moste vsefull and necessary manufacture of makeing of swordꝭ. blades, fauchions, skeynes, and rapyer blades, by which alone whole townes and multitudes of people are mainteyned in partꝭ beyond the seas should bee planted and cherished within Our realmes of England and Ireland, Our owne domynions affoarding all materiallꝭ thereunto belonginge as good and plentifull, and rather better cheape then any other forraigne kingdome whatsoever, by the establishing of which soe comodious and needefull a manufacturer in theise realmes not only many of Our subiectꝭ will bee sett on worke and drawne from that habitt of idlenes which is the bane of comonwealthes to bee ymployed in honeste labors whereby to mainteyne themselves and famylies and doe good to others, but alsoe Our Selfe and Our subiectꝭ shall, for all private and publique occasions, bee furnished att home of those moste vsefull and necessary armes and weapons att moderate and easie prices, without depending vpon the will of others whoe for the ꝑsent have power in that particular to furnish Vs and our subiectꝭ with false ware and at deere rates, or otherwise to disarme Vs att theire will and pleasure: And whereas Our trustie and welbeloved subiecte, Beniamyne Stone, swordblademaker, att his greate costꝭ and charges, by his industrie, skill, and endeavors, hath lately broughte to pfeccon the arte, skill, and secrett of true forging, hardening, grinding, glasing, tempering, and workeing, by the helpe of mill or millꝭ, of blades, fauchions, skeynes, rapier blades, and blades serving for restꝭ of musketꝭ and all other sortes of blades; and hath alsoe ꝓvided choice and experte workemen, and erected and sett vpp sundry millꝭ of diverse formes and fashions, for the forging, grinding, and glasinge of the said blade, not heretofore in knowne vse and practice within Our saide domynions.

From Letters Patent—**Rolls Chapel.**

A.D. 1637 . . . . N° 101.

GREGORY AND DICKENSON.

Covering Cloth with Ormer Shells.

CHARLES, by the Grace of God King of England, Scotland, France, and Ireland, Defender of the Fayeth, &c. To all to whome theise ꝑsents shall come, greeting: Whereas Our welbeloved subiectꝭ, Edmond Gregory, gentleman, and Lyminge Dickenson, Our servaunt, by theire humble peticon to Vs lately exhibited, have shewed unto Vs that they have by theire paynes and industrie found out an arte for the ꝑsent takeing away of outsides of shellꝭ comonly called ormer shellꝭ, taken aboute Our Islandꝭ of Garnsey and Jersey and some other partes of Our dominions never heretofore vsed but for rockꝭ, vntill the peticoners, by takeing away the outside, have laied itt with tortesse shellꝭ and whalebone or wood, for divers vses, and now lately on lynnen, cloath, taffatie, and other stuffꝭ sometimes mixed with silver and gilte, and wilbee fitt for hangingꝭ for beddꝭ and many other vses: And therefore they have humbly besought Vs to give to vnto them and theire assignes Our free L'res Pattentꝭ for fourteene yeares for the sole makeinge and vseinge the saide arte of covering cloath, taffatie, wood, or other stuffꝭ, beeing a newe invencon, in as ample and large manner as in the like cases is vsed to bee graunted, ꝓhibitinge all others to vse the same or the said shellꝭ, but as formerly for rockꝭ, but such as shall worke for and vnder the peticoners, and they shall pay unto Vs five pounds p anñ for the same.

From Letters Patent—**Rolls Chapel.**

A.D. 1637 . . . . N° 105.

CHIVER.

Instruments for Raising Water, Draining and Irrigating Lands; Planting Trees; Training Hops on Straw Bands, &c.

CHARLES, by the Grace of God King of England, Scotland, Fraunce, and Ireland, Defendor of the Faith, &c. To all to whome theise presentȩ shall come, greeting: Whereas Our welbeloved subiect, Robert Chiver, gentleman, by his humble petiĉon to Vs exhibited hath informed Vs, That hee, with much industrie and charge, hath found out a newe and better waye of improvement of landȩ and course of husbandry then hath byn formerly practised in anie of Our kingdomes, by raiseing of waters by severall hatches, bayes, engines, wheeles, mills, pumps, and other instrumentȩ, and by altering the nature, quallity, forme, and superficies of some groundȩ, and by inlargeing of rivers and watercourses, according as the scituaĉon of the places and occasions shall require; and by drayneing and raiseing of lowe, wett, fenny, moorish, and marshe groundȩ, and by lymeing and marleing of some groundȩ, and by vseing of gravell, sand, rubbishe, stones, and flyntȩ in some groundȩ, according to their severall natures and quallities, and by planting and producеing greate increase of hoppes, with muche saveing of wood nowe vsed in poleing thereof, by makeing them growe, runne along, and beare vpon ropes or wreathes made of strawe, reedes, sedge, rushes, brushwood, or bryars, to reache from one hopphill to an other, the said roapes or wreathes being tyed vnto and soe supported only by one shorte pole of aboute eighte foote long, placed vpright in everie severall hopphill, or supported by one pole of fifteene foote long with pynns and crokes, and by artificiall engines or instrumentȩ to be vsed for expediĉon in makeing greate trenches to convey the waters to the groundȩ, and to raise and alter the forme and superficies of some grounds, and by planting of younge trees for the increase of tymber in drye and barren groundȩ.

From Letters Patent—**Rolls Chapel.**

A.D. 1640 . . . . N° 126.

FORD.

Navigating Vessels by Oars and Wheels Turning on Axletrees.

CHARLES, by the Grace of God King of England, Scotland, Fraunce, and Ireland, Defendor of the Faith, &c. To all to whome theis ꝑsentes shall come, greeting: Whereas Wee the humble petiĉon of Our trusty and welbeloved subiect, Edward Ford, Esquier, to Vs exhibited, Wee are informed, That the said Edward Ford, by his industrye and charge, hath invented a way for a more speedy, thrifty, and safe passage and navigaĉon of boates and vessells vpon navigable rivers, as alsoe of all little shipps of good of good burthen in and out of havens, whereby hee cann make all boates, barges, and lighters to goe faster against wynd and tyde then nowe they vse to doe with halfe the men they have formerly vsed, and with very little (yf any) vse of horses or men for towing of such vessells on the shoare side, whereby halfe the charge of men and neere the whole (if not all) charge of horses wilbe saved, and vessells may passe against wynd and tyde; and when the rivers overflowe the banckes and alsoe the owners of groundȩ adioining to navigable rivers may enjoy them

more private, to theire greater benefitt; and the said Edward Ford, by the same way, cann bring in little shipps, barges, and vessells in and out of havens without, or against, any small wynd or tide, and cann transport souldiers and passengers without, or against, wynde yf the seas be not rough; and the said Edward Ford hath further, by his said peticon, informed us, that his said Invencon will never anyway hinder the old way of sayling, but may on many occasions be added thereto for the speed of sayling, and may att any tyme be layde aside in a corner of the shipp, and quickly added agayne when neede shalbe. The way whereof hereby declared by the said Edward Ford, for the effecting of the particulars above mencoed, being partly by newe fashioned oares whose finnes open and shutt, and are to be applyed to the vessels that shall vse the same in a newe way not hetherto vsed, and partly by wheeles and other engines turning about axletrees, and placed in and about the vessells in such manner as hath not hitherto brought to any effect by any others. Witness Ourselfe att Westm, the Fowerth Day of March.

From Letters Patent—**Rolls Chapel.**

A.D. 1642 . . . . N° 127.

WHEELER.

Raising Water; Auger for Boring Wood; Fixing Piles without Driving; Raising Weights.

CHARLES, by the Grace of God, &c. To all to whome theis ꝑsentꝭ shall come, greeting: Whereas We have been informed by the humble peticon of our welbeloved subiect, Willm Wheeler, gent., That hee, by his great chardges, study, and labour, hath attayned the skill of some new and ꝑfitable Invencons concning waterworkes and otherwise which may be very comodious for our svice, and very beneficiall for our subiectꝭ, the like whereof have not by any others been formly made or vsed within this Our kingdome of Englande, that is to say, an Invencon for rayseing of water from three foote to six foote, and soe to twelve foote, and soe for rayseing of water from five hundred to a thousand tonn in an houre, to be done by man, horse, wind, or weightꝭ of reasonable quantities to great heightꝭ, from twenty foote to an hundred foote; secondly, for boaring of tymber with a wooden awger faster and bigger then any man can doe with iron or steele; thirdly, for putting in of piles into the ground without driveing; and fourthly, for rayseing of ponderous weightꝭ: And whereas by his said peticon hee hath further informed Vs, that hee hath in the vnited Netherlandꝭ ꝑformed some of his said Invencons to good content, whereby hee hath obtayned from the states genall, and ꝑticularly of Holland and West Vriesland, an Octroy or L'res Patentꝭ for the sole vseing of those Invencons as a reward of his great expences and labour therein.

From Letters Patent—**Rolls Chapel.**

A.D. 1660 . . . . N° 128.

TOMLYN.

Texting and Flourishing on Vellum and Parchment.

CHARLES THE SECOND, by the Grace of God King of England, Scotland, France, and Ireland, Defender of the Faith, &c. To all to whom theis presentꝭ shall come, greeting: Whereas Wee haue bin informed by the humble peticon of George Tomlyn, cittizen and staconer, of London, That by his industry and paynes, with much charges and expences, hee hath inuented a new manufacture or way to text and flourish velomes and parchmentꝭ in

black, and white, with Our royale name both in Latine and English, with our portraicture, impiall armes, badges, and other ornamentꝯ, better and more exact then the name and title of any former king hath heretofore been done by any other pson, for such reasonable rates as hee doth and will take for the same: And that the said manufacture is wrought with a rolling printing presse and ingraven plates, and is of much benefitt and advantage to our subiectꝯ, in respect as good worke otherwise wrought cannot bee done for tenne times the price. Witness Ourselfe at Westm̃ the First Day of February.

From Letters Patent—**Rolls Chapel.**

A.D. 1660 . . . . N° 129.

FRANK.

Setting Furnaces to Save Fuel and Lessen Smoke.

CHARLES THE SECOND, by the Grace of God, &c. To all to whome these p̃sents shall come, greeting: Whereas Wee haue been informed by the humble petic̃on of Our trusty and welbeloved subiect, Serieant Maior Thornef Frank, That by his industry and study, with much charge and expences, he hath attained to the perfection of new setting or hanging of brewing furnaces and all other boyling furnaces whatsoever, to the saveing of fewell and lessening of the great annoyance of smoake, and likewise of building of furnaces his owne way for the melting or smelting downe of all manner of mettalls out of their oares. Witnes Ourself att Westr, the Three and twentieth Day of July.

From Letters Patent—**Rolls Chapel.**

A.D. 1661 . . . . N° 131.

WORCESTER.

Making Watches or Clocks to go without Winding-up; making Guns or Pistols; detaching Horses from Coaches on their taking Fright; making Boats Sail against Wind and Stream.

CHARLES THE SECOND, by the Grace of God, &c. To all to whome these p̃ntꝯ shall come, greeting: Whereas Our right trusty and entirely beloved couzin, Edward Marquesse of Worcester, hath for many yeares applyed his thoughtꝯ and studies, and hath bene at very great charges, to contrive and perfect divers rare and new invenc̃ons, contenting himselfe with the good and advantage which will redound to the publique and to every perticuler industrious workman or curious persons who shall make vse of the said invenc̃ons, the productꝯ of his extraordinary expences and ingenuity: And whereas amongst other vseful and new invenc̃ons of farr greater consequence, the said Marquesse hath found out and experimented these severall new invenc̃ons hereinafter perticulerly mec̃oned (that is to say), To make a watch or clocke without string or chaine, or any other kind of winding vpp but what of necessity must follow if the owner or keeper of the said watch or clocke will know the houre of day or night, and yett if hee lay it aside severall dayes and weekꝯ without looking or medling with it, it shall goe very well, and as justly as most watches that ever were made: And alsoe an invenc̃on to make certaine gunns or pistolls which in the tenth part of one minute of an houre may, with a flaske contrived to that purpose, be recharged the fourth part of one turne of the barrell which remaines still fixt, fastening it as forceably and effectually as a dozen thrids of any scrue which in the ordinary and vsuall way require as many turnes: Alsoe an invenc̃on to make an engine

appliable to any coach, by which a child of six yeares old may secure from danger all in the coach, and even the coachman himselfe, though the horses become never soe unruly, the child being able in the twinckleing of an eye to loosen them from the coach in what posture soever they draw or turne, bee it ever soe short, or to either hand: Lastly, an invention to make a boate that roweth, draweth, or setteth even against winde or streame, yea both, and to any part of the compasse which way soever the streame runs or wind blowes, and yett the force of the wind or streame causeth its moc̃on, nothing being required but a steersman, and whilst the boate stayeth to bee loaded or vnloaded the streame or wind shall performe such worke as any water mill or windmill is capable of. All which new invenc̃ons being of publique vse and benefitt if the same were put in practice, and the lawes of England haveing especially provided for the incouragment of such as are the first authors and invento^{rs} of profittable and ingenious invenc̃ons.—15th November 1661.

From Signet Bill—**Rolls Chapel.**

A.D. 1661 . . . . N° 132.

TOGOOD AND HAYES.

Forcing and Raising Water.

CHARLES THE SECOND, by the Grace of God, &c. To all to whome theise presentȩ shall come, greeting: Whereas Our trusty and welbeloved subiectȩ, Thomas Togood, gent., and James Hayes, Esquire, have made it appeare vnto Vs, That by theire great industry and study, with much charge and expences, they have contrived and perfected a newe invenc̃on of forceing water by bellowes not done with wind, as alsoe the draweing it vpp with leatherne baggȩ linked togeather in manner of buckettȩ where the bellowes cannot be placed, which may be for the publique benefitt of shipping, drayning of mynes, bringing water to houses, emptyeing of rivers or pondȩ, drayneing and watering of groundȩ, or any way of pumping water, together with a particuler way of forceing water through the bottome or sides of shipps belowe the surface or toppe of the water, which may bee of singuler vse and ease in navigac̃on, and was never before publiquely done or vsed within any of Our kingdomes, dominions, or territories.

From Letters Patent—**Rolls Chapel.**

A.D. 1662 . . . . N° 136.

WEYMS.

Making Ordnance; Draining Mines and Lands; and Raising Weights.

CHARLES THE SECOND, by the Grace of God, &c. To all to whom these p̃sents shall come, greeting: Whereas Our welbeloved subject, James Weyms, master gunner, of England, by his greate industry and studdy, with much charge and expences, hath invented and found out a newe way of makeing light ordinance shooting from a quarter of a pound bullett to a demmy cannon, a traine whereof of seaventeene peices was tryed in Our p̃sence by a councell warre with peeces of brasse of like calliver; and hath alsoe found out a way whereby all motions caused by the force of a river, winde, or horses may be done by the strength of one or twoe men, as the makeing of all sorts of mills and lifting of waights out of mines and colepittȩ, and draineing of them: And alsoe the draineing of such lands as are oppressed with water, by an engine, the strength thereof may be dobled or trebled at pleasure.

From Letters Patent—**Rolls Chapel.**

A.D. 1662 . . . . N° 137.
TOMLYN.

Printing the Royal Arms, &c. with a Rolling Press and Engraven Plates.

CHARLES THE SECOND, by the Grace of God King of England, Scotland, France, and Ireland, Defender of the Faith, &c. To all to whome theis presentꝭ shall come, greeting: Whereas Wee have bin informed by the humble peticõn of George Tomlyn, citizen and stationer, of London, to Vs lately exhibited, That he having with greate paines and charges invented a newe way to text and florish veloms and parchmentꝭ with Our name, pourtracture, imperiall armes, badges, and other ornamentꝭ, by printing the same with a rolling printing presse and engraven plates, to the greate benefitt of our subiectꝭ, for that as good worke otherwise brought cannott well be afforded for tenn tymes the price, the worke being likewise very neate and of good ornament, to Our Letters Patentꝭ, and other exemplificacõns: And that the said George Tomlyn might receive incouragement for his said invencõn according to lawe, he, by his sufferingꝭ for Our late Royall Father, of blessed memory, having bin reduced to greate necessities, humbly besought Our royall graunt for the sole vse and benefitt thereof for foureteene yeares, according to lawe, which Wee referred to our attorny generall, whoe, finding the said allegacõns to be true and request fitt to be graunted, Wee, by Our Letters Patentꝭ, dated at Westm̃ the first day of February, in the thirteenth yeare of Our reigne, were graciously pleased to graunt the same vnto him for foureteene yeares, as by the said Letters Patentꝭ more at large may appeare: And the said George Tomlyn having further informed Vs that he cannot reape the benefitt of Our intended favor for some reasons suggested vnto Vs by the said George Tomlyn, and hath therefore humbly besought Vs to graunt him other Our Letters Patentꝭ for the sole printing of Our royall name and title in text hand, both in Latin and English, vpon veloms and parchmentꝭ, with Our royall pourtracture, imperiall armes, badges, and other ornamentꝭ, with a rolling printing presse and engraven plates, for the terme of twelve yeares, remainder of the said foureteene yeares, according to Our most gracious and royall intencõn, he surrendering vp the said recited Letters Patentꝭ to be cancelled and made voyde: And the said George Tomlyn hath further humbly prayed Vs that Wee would, in our said Letters Patentꝭ, likewise graunt vnto him the like printing of the name and title of Our royall and deare consort, Queene Katherine.

From Letters Patent—**Rolls Chapel.**

A.D. 1664 . . . . N° 143.
HILL.

Making Carriages; Guns and Pistols; Powder Horn; Instrument for Breaking and Dressing Hemp and Flax, and Watering Linen; Pendulum for Measuring Time, and Finding out the Longitude at Sea.

CHARLES THE SECOND, by the Grace of God King of England, Scotland, France, and Ireland, Defender of the Faith, &c. To all to whom these p̃sents shall come, greeting: Know yee that Wee, being willing to cherish and encourage all laudable endeavours and designes of such Our subiects who shall find out vsefull and p̃fitable arts and invencõns for the comoditie of Our people, by granting and and appropriateing vnto them for some terme of yeares the fruite and benefitt of theire industry, whereby theire labours and expences in the attainement thereof may bee recompensed and rewarded vnto them, and being also willing to encourage and countenance as much as Wee may these severall invencõns hereafter

specified and expressed, not heretofore used in Our kingdome of England, but found out and invented by Our welbeloved Abraham Hill, of Our citty of London, Esqr., and Fellow of the Royall Society of London for improveing of Naturall Knowledge, and his assistants, and to bee brought into use in this Our said kingdome of England, by his and theire industrye and expence, the fabricks whereof are hereafter described, of Our especiall grace, certaine knowledge, and meere, haue given and graunted, and by these presents for Vs, Our heires and successors, doe giue and grante vnto the said Abraham Hill, his executors, administrators, and assignes, full and sole power, lycence, priviledge, and authority, that hee the said Abraham Hill, his executors, administrators, or assignes, by himselfe or themselues, or by his or theire deputies, agents, servants, factors, workemen, and such others as hee the said Abram Hill shall at any tyme agree with, shall and may at all and every tyme and tymes hereafter, dureing the terme of fowerteene yeares next ensueing the date hereof, make, vse, practice, teach, and put in vre the makeing of a carriage, chaire, coach, or charriott with twoe wheeles vpon one axeltree, haveing a seate orchaire sett vpon two shafts or peirches, one end resting vpon the axeltree, the other vpon the horse; and of another sorte of a carriage, chaire, coach, or charriott, which hath twoe or more such shafts or peirches, with foure wheeles; an of another sorte of carriage, chaire, coach, or chariott, with hath a seate or chaire placed vpon two wheeles or more, whereof twoe move on the end of a crooked aleltree, with rollers or otherwise; and of another sorte of a carriage, chaire, coach, or charriot haveing the seate or chaire hung vpon long springs before and behind; and of another sorte of a carriage, chaire, coach, or chaires, which hath the seate or chaire placed vpon winding springs, fastned to the pearch or to the axeltree, and winding about the same: And likewise that hee the said Abraham, his executors, administrators, or assignes, by himselfe or themselues, or by his or theire deputies, agents, servants, factors, & workemen, and such others as hee the said Abraham Hill shall at any tyme agree with, shall and may at all and every tyme and times hereafter dureing the said terme of fouerteene yeares next ensueing the date hereof, make, use, practice, teach, or put in vre the new way of makeing of a gun or pistoll, the breech whereof riseth vpon an hindge by a contrivance of a motion from vnder it, by wich it is alsoe let downe againe and bolted fast by one and the same motion; and alsoe of another gun or pistoll which hath a hole att the vpper end of the breech to receiue the charge, which hole is opened and stopt by a peece of iron or steele that lies along the side of the peece, and moveable by a ready and easy motion; and alsoe of another gun or pistoll which is charged and primed at a hole vnder the sight or visier at the vpper end of the breech, and shutts within with a cartridge or roundish plate of iron, and without with the sight or visier; and alsoe of another gun that is charged and primed in like manner at a hole belowe the sight or visier, which is shutt with a screw, smaller below then aboue; and alsoe of another gun or pistoll for small shott, carrying seaven or eight charges of the same in the stocke of the gun, which is lett into the gun by thrusting forward the sight, and by a square cartridge within the peece neere the breech, soe that the powder being put in by a hole vnder the sight, both for chargeing and primeing the same, togeather with a touch hole, being shutt both within and without by thrusting back the sight to his place: And alsoe of apowder horne or box, which opens by pressing with the finger the end of the charge or allowance, and shuts by a spring within it: And likewise of an instrument or engine for breaking of hemp and flaxe, and dressing the same in a new waye, as alsoe for washing of all sortes of linnen: And lastly, a new way of makeing of watches and clocks to bee vsed at sea for exact measuring of tyme, towardes the finding the longitude and knowing the true course and place of a shipp, differenced from all other sorte of watches by having, instead of a ballance, a rodd of wyer, or a thynn narrow plate, with a weight at the lower end thereof, called a pendulum, and at the vpper end an arme with twoe catches or holes to moue it, and certaine crooked places or cheekes for regulating the motion thereof, which motion is pduced by one or more springs or weights, the said watches being fitted with balls and socketts to hang by for goeing steadily at sea.

From Letters Patent—**Rolls Chapel.**

A.D. 1664 . . . . N° 145.

HENSHAW, WATSON, HALE, AND DEWEY.

Making a Mixed Metal.

CHARLES THE SECOND, by the Grace of God, &c. To all to whom these ꝑsents shall come, greeteing: Whereas our welbeloved Maior Thomas Henshaw, Francis Watson, Thomas Hale, and James Dewey, gen., have informed Vs, That there is a certaine stone or minerall long since knowne and found in this Our kingdome of England, though never yett any discovery of the least benefitt or vse thereof, till they, by theire greate paines and industry and expence of much tyme and money in tryalls and experiences, have att length invented and found out a way by the addic̃on and mixing of chargeable ingredients to make a valuable mettall for divers sorts of vessells and vtensells, which may bee of very greate vse and benefitt to Our subiects in generall, being as sweete, cleane, and wholsome as silver, indure the fire as well, and is as vnapt to tarnish and canker, and doth not intrench or interfere with any psons right or iust ꝑtence in pticular.

From Letters Patent—**Rolls Chapel.**

A.D. 1664 . . . . N° 146.

HUTCHINSON.

Making Vessels for Melting Glass and Metals, and Saving Fuel; Making Pot Ashes.

CHARLES THE SECOND, they Grace of God, &c. To all to whome theise presentꝭ shall come, greeting: Whereas Wee have received good informac̃on, That Samuell Hutchinson, of London, merchant, hath by greate cost and charges in divers tryallꝭ and experiamentꝭ found out a profitable and convenient way for the makeing and frameing of boyling vesseleꝭ for salt workes and other vses, pottashes, and of pottꝭ, for the melting of glasse, mettall, and other mettallꝭ, and for the ordering and saveing of fire and fewell in the said workes, in a farre lesse chargeable way and in manner more beneficiall then ever heretofore hath in that way byne vsed or knowene (that is to say,) of casting, makeing, and frameing the said boyling vessellꝭ, and other the like artificiall contriveances, for the more easie and speedy evaporateing and seperating the water from the salt, never heretofore vsed in anie salt workes, copperice workes, allome workes, and other sortꝭ of liquors, to bee evaporated, congealed, and condenced: As also a new and vnknowen way of makeing pott ashes with tobacco stalkes and other vegitables, with the art of ioyning and mixing the volatile spiritꝭ with the fixed—in the same and likewise the true and right way of ordering and mixing the materiallꝭ for makeing of the said pottꝭ firme and lasting, for the melting downe of glasse, mettall, and other mettallꝭ and mynerallꝭ: As also a new and vnknowen way of makeing pott ashes with tobacco stalkes, beane stalkes, and other vegetables, with the art of mixing and ioyning the volatile spiritꝭ with the fixed in the same.

From Letters Patent—**Rolls Chapel.**

A.D. 1666 . : . . N° 149.

SMETHWICK.

Grinding Optical Glasses.

CHARLES THE SECOND, by the Grace of God, &c. To all to whom these presentꝭ shall come, greeting: Whereas We have beene informed by Our trusty and welbeloved Francis Smethwick, gentleman, that by his great study and charge he hath found out a new and pfect way to grind opticke glasses in figures that are not sphericall, which will add much to the vse of pspective glasses by sea and by land, as well as for the heavens, because his are all open, and soe shew the obiect clearer, as admitting more sight; whereas the sphericall which are hitherto made must be covered for the most part, and will alsoe in reading or magnifying glasses, now comonly called microscopes, shewe all thingꝭ in more distinct and in truer proporc̃ons; in burning glasses will fire more strongly, and discover in the darke at much greater distaunce.

From Letters Patent—**Rolls Chapel.**

A.D. 1667 . · . . N° 154.

HOWARD AND WATSON.

Graving Ships and other Vessels.

CHARLES THE SECOND, by the Grace of God King of England, Scotland, France, and Ireland, Defender of the Faith, &c. To all to whome these p̃sentꝭ shall come, greeting: Whereas Wee have byn informed by the humble petic̃on of Our welbeloved subiectꝭ, Sir Phillip Howard, Knight, and Francis Watson, Esq̃., That Wee & divers of Our subiectꝭ conc̃ned in shipping are att great charges in the sheathing shipps for the Streightꝭ & other forreigne partꝭ, to defend their sides from the worme, and the vsuall way of graveing vessells with brimstone, rosin, &c. begettꝭ a roughnesse obstructive to sayling; and that they, by their great industry & care, have found a certaine waye of graveing, garnishing, & colouring of shipps, barges, wherryes, and other vessells, being their owne invenc̃on & never before vsed in this Our kingdome, wch way of graveing will p̃vent the eating of the worme, & thereby save the sheathing, being much more cheape & durable, & that the said way of graving will make the sydes of the shipps or vessells that they will bee more buayant and sayle much faster.

From Letters Patent—**Rolls Chapel.**

A.D. 1673 . . · . N° 169.

BAYLY.

Mill for Grinding Seeds and Wood; Oil-Press; Engine for Cleansing and Digging Rivers, Harbours, &c.

CHARLES THE SECOND, &c. To all to whome theis presents shall come, greeting: Whereas Lewis Bayly, gentleman, by his humble petic̃on informing Us, That at very greate charge and expence he hath lately invented and erected vpon yᵉ banke of the river of Thames, between Reddrith and Deptford, a mill for the grinding of rape seed and lynnseed

Printers to the Queen's most Excellent Majesty. 1855.

with a presse to produce y^e^ oyle from the same; and also for y^e^ grinding of Brazile wood, logwood, and other hard woods and things grindable, which mill workes a new way, without stones, and to a farre greater advantage then hath any where hitherto beene practized, by meanes of which invencon a considerable trade, now cheifely engrossed by the Dutch, may be brought into O' dominions: And that hee hath likewise invented and experimented beyond the seas a new engine for the cleansing and digging rivers, harbors, and havens, to any depth vnder five and twenty foote at low water, a draught or scheme whereof fairely drawne vpon vellome is herevnto annexed.—Signet Bill, dated 20th February 1672.

From Signet Bill—**Rolls Chapel.**

A.D. 1675 . . . . N° 183.

ANGELL.

Erecting and Maintaining Two Lighthouses on Spurn Point.

CHARLES THE SECOND, by the Grace of God, &^c^. To all to whome these ꝑsents shall come, greeting: Whereas Wee have beene informed by the humble peticon of George Spart, Phillipp Edwards, Andrew Wardlowe, John Crisping, Robert Morse, John Morse, Richard Pidgeon, and William Landwell, That they, together with many other masters of shipps vseing the northerne coast, have had great losses att sea, and especially of late neare the mouth of Humber, vpon a very broad long sand, throwne vpp and discovered about six or seaven monethes since in the plaine comrse by the northward, by reason whereof they and all passing that way sayle in great hazard and danger, and especially in the night; and considering that lights erected vpon the Spurne point att the mouth of Humber would for the future ꝑvent such danger and losses, and be a great safety to the peticoners and the rest in their passage, the peticoners did apply themselves to Justinian Anyell, of London, merchant, hee being proprietor of a peece of ground fitt for such purpose, and ꝓposed to him,—that if he would erect two lights vpon the said ground, the peticoners would freely contribute to pay him towards the charges and maintenance thereof one farthing a tonn: And whereas the said Justinian Angell hath accordingly att the peticoners' request erected two lights att the mouth of Humber, vpon the Spurne point, hee being owner of the same, which the peticoners find to be soe well built and soe well placed, and of that height that they will be a very great benefitt and an absolute safety and ꝑservacon to all navigators vpon that coast, and especially the traders of Newcastle and into Humber, in stresse of weather, there being noe ground vpon all the coast that any light cann be erected vpon to doe any service to the navigators tending to the aforesaid sands and harboure; but the aforesaid place, and the matter and charge of mainteineing the said lights, being to be of the peticoners' owne free and voluntary payments and the rest of the traders vpon the said coasts, and for their owne safety, both for their psons and estates, the said peticoners have therefore humbly prayed, that Wee would be graciously pleased to grant vnto the said Justinian Angell full power and authority to kindle and maintaine the said lights for the good of our people in generall, and pticularly the peticoners, who have beene great sufferers for want of them: And whereas Wee did referre the consideracon of the said peticon to the master warders, assistants, and elder brethren of the Trinity House of Newcastle, who have examined and certified to Vs the necessity of the said lights, and that the

same will be of greate vse and benefitt to navigacon. Now know yee that Wee, vpon the humble peticon aforesaid, and for the pmoteing and continueing of soe good and necessary a worke for the benefit and safety of our subiects and pservacon of their estates, of Our especiall grace, certaine knowledge, and meere mocon, have given and granted, and by these psents for Vs, Our heires and successors, doe give and grant, vnto the said Justinian Angell, his heires and assignes, full and free liberty, lycence, power, and authority, that hee and they and every of them shall and may continue, renew, and maintaine, or cause to be continued, renewed, and maintained the said lighthouse, with lights to be continually burneing therein in the night season, whereby the said shipps may the better come to their harbours and ports without pill; and Wee doe further, according to the said peticoners' desire, for the defraying the necessary charges and constant maintenance of the said lighthouse, of Our speciall grace, certaine knowledge, and meere mocon, for Vs, Our heires and successors, declare and grant, that for ever hereafter there may be collected and taken, and the said Justinian Angell, his heires and assignes, may collect, have, and take of and for every shipp or vessell passing by the said lighthouses, and belonging or tradeing to the ports of Newcastle or Sunderland, or either of them, or any the creekes or members thereof, one farthing the tunn, according to the burthen of the said shipps or vessels respectively; to have, hold, and enioy the said libertyes, lycences, powers, and authorities, and the said contribucons, dutyes, and sumes of money, and other the pmisses before, in, and by these psents granted, and every of them, vnto the said Justinian Angell, his heires and assignes, for ever, in its large and ample manner, to all intents and purposes as the masters of Trinity House, att Debtford Strand, in Our county of Kent, or any other pson or psons, any the like libertyes, lycences, powers, and authorityes now have, hold, or enioy, or may or might have, hold, or enioy in any other place or places within this Our realme, yielding and paying therefore yearely and every yeare to Vs, Our heires and successors, the yearely rent or sume of five pounds of lawfull money of England into the receipt of the exchequer att Westm, or to the bayliffe or receiver generall of the county of Yorke for the time being, att the feast of Saint Michael the Archangell, only. And forasmuch as other order cannott be well taken for the receiveing of the said one farthing p tunn for the establishing and continuance of this good worke then in the ports, roades, creekes, havens, and harbours vnto which the said merchants and marrinors doe and shall trade and arrive, Wee doe therefore for Vs, Our heires and successors, ordeine and appoint and alsoe streightly charge and command all and every the customers, collectors, comptrollers, surveyors, searchers, and waiters, and their and every of their clerkes respectively, within the ports of Newcastle and Sunderland aforesaid, and all captaines, lievtennants, and all other Our officers belonging to them or any of them, and alsoe all wardens, portreeves, and keepers of any of our said ports, roades, harbours, and havens, and all wharfingers, porters, and labourers belonging to the waterside, and all other the officers of the customes, to Vs, Our heires and successors, now being, and which for the time hereafter shall be, in the said ports, harbours, roades, creekes, havens, and places to whome it shall or may appertaine, that they nor any of them att any time hereafter doe or shall take or receive any entry or cocquett, or give, make, or certifie any cocquett, returne, victualling bill, or discharge, or pmitt any goods or stores to be laid on land, or discharged, or shipped out from or on any of the said shipps, or suffer any shipps or other vessells tradeing and lyable to the payment aforesaid to passe by or from them without a ticquett or note vnder the hand writeing of the said Justinian Angell, his heires or assignes, or his or their deputy or deputyes, testifying the payment thereof, vpon paine of Our high displeasure, and such punishment as by the lawes and statutes of Our said realme may be inflicted on the offenders for such their contempt or neglect of Our royall will and comandment.

From Letters Patent—**Rolls Chapel.**

A.D. 1675 . . . . N° 186.

NEALE.

Pump for Draining Mines, &c.

CHARLES THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Wee have beene informed by the humble peticon of Our trusty and wellbeloved Thomas Neale, Esquire, That he hath invented an engine or pumpe serviceable for the dreyning of mines and other vses of that nature, which forces and drawes water in one whole entire barrell, with one and the self same stroake drawing more water, and raising of it higher with lesse strength and much more ease than hitherto any engine that hath beene invented by any other person hath done, which said engine hath beene seene and tryed by several persons knoweing in matters of such nature, and by them approved of as fitter for all sorts of mines and waterhowses in any parte of this kingdome, then any of those yett extant, a modell whereof is hereunto annexed, with an explanacon thereof. Signet Bill, dated 13th September 1675.

From Signet Bill—**Rolls Chapel.**

A.D. 1675 . . . . N° 187.

REEVES.

Foiled Glass for Casting and Spreading Light; Glass Pipes to hold Candles or Lamps.

THE KING. To all to whom these presentꝭ shall come, greeting: Whereas Our trusty and welbeloved subiect, Richard Reeves, gent., hath with long study and greate expence invented and brought to perfeccon the arte of casting and spreading of light by a new and vnusuall figure of foiled glasse, polished without grinding, with pipes of glasse to hold candles or lampes, some evident demonstracons whereof Wee have seene to Our satisfaccon, and doe beleive the same may in severall respectꝭ prove very vsefull and beneficiall to Our subi ectꝭ in generall.

From Letters Patent—**Rolls Chapel.**

A.D. 1676 . . . . N° 191.

JOHN ARIENS VAN HAMME.

Making Tiles and Porcelain.

CHARLES THE SECOND, by the Grace of God King of England, Scotland, France, and Ireland, Defender of the Faith, &c. To all to whome these ꝑsentꝭ shall come, greeting: Whereas John Ariens Van Hamme hath humbly reꝑsented to Vs, That he is, in pursueance of the incouragement he hath received from Our Ambassadour at the Hague, come over to settle in this Our kingdome, with his family, to exercise his art of makeinge tiles, and porcelane, and other earthen wares, after the way practised in Holland, which hath not beene practised in this Our kingdome, and haveinge humbly besought Vs to grant him the benefitt thereof as of a new invencon here.

From Letters Patent—**Rolls Chapel.**

A.D. 1682 . . . . N° 222.

MARBURY.

Making Salt and Draining Brine Pits and Mines.

CHARLES THE SECOND, by the Grace of God, &c. To all to whome these presentꝭ shall come, greeting: Whereas John Duson, gentleman, hath by his humble petiĉon represented vnto Vs, That by greate paines, study, and expence both of time and money, he hath found out a new invention or way for the makeing of salt cheaper and better then any was ever vsed before in any of Our dominions, which, being tryed many yeares since before persons of the best quality and skill in such affaires, was approved as a thing that would (if putt in practice) be of generall vse and advantage to Our subiectꝭ, and that he haveing since much improved the said invenĉon by severall new addiĉons, and alsoe found out an other very vsefull invenĉon for the dreining and drawing of water out of brine pittꝭ and mynes with greater ease and speed and lesse charge then is done by any other meanes yet vsed for the like occasions, and in regard the said petiĉoner is an alien, and not capable of takeing a grant in his owne name, having humbly besought Vs to grant vnto William Marbury, Esquire, our Letters Patentꝭ for the sole vse and exercise of the said invenĉons in this or any other of Our kingdoms and dominions for the terme of foureteene yeares, according to the statute in this case provided.

From Letters Patent—**Rolls Chapel.**

A.D. 1684 . . . . N° 242.

JACKSON.

Making Paper.

CHARLES THE SECOND, &c. To all to whom these presents shall come, greeting: Whereas Wee have been informed by the humble petiĉon of Our trusty and welbeloved subiect, Christopher Jackson, of Rither, in Our county of York, gentl., That by his great industry and expence in improving the art and mistery of making, writing, and printing paper (a manufacture much wanting in this nation), hee hath made great progresse therein, and amongst severall other improvements hath invented a mill or engine, either for wind or water, which dissolueth, whiteneth, and grindeth raggs, and prepareth all other materialls whereof paper and pastboard hath been or may be made in farr less tyme then the mills hitherto in vse doe, being a new invention never yett practiced in any of Our kingdomes or dominions, and of great advantage to all Our good subiects in generall. Witnesse, &c., the Eleaventh of October, in the six & thirtth yeare of Our reigne.

From Letters Patent—**Rolls Chapel.**

A.D. 1685 . . . . N° 245.

MOORE.

Making Alum and Alum-Glass.

JAMES THE SECOND, &c. To all to whom these presents shall come, greeting: Whereas by the humble petiĉon of Our trusty and welbeloved Thomas Moore, of Loftus, in Our county of Yorke, Esquire, Wee are given to vnderstand, That with considerable charge & paines he, the said Thomas Moore, hath found out a way for makeing better allom, and in a cheaper way then is used or ever was att any such worke; and also out of the sayd allom mines to make curious christalline allom or allom glasse for severall good uses and ornaments for the publick good, and preparations of allom with other matters for medicinall, chirurgicall, mettallick, and minerall improvements. * * * *

Shall and may from tyme to tyme, and all and every tyme and tymes hereafter during the terme of fourteene yeares next ensuing the date of these presents, use, practice, exercise, and enjoy y^e^ said inventions for makeing better allom, and for makeing christoline allom or allom glasse, and preparaĉons of allom with other matters, for the good uses and ornaments aforesaid, and to cast and put some of them into such moulds, formes, figures, as may be advantagious for his said mettallick and minerall improvements so by him found out as aforesaid, within Our kingdomes of England, Scotland, and Ireland, and Our dominions and teritoryes thereunto belonging.

From Letters Patent—**Rolls Chapel.**

A.D. 1685 . . . . N° 247.

CORCELLIS.

Making Pitch or Tar.

JAMES THE SECOND, &c. To all to whome these p̄sent ȼ shall come, greeting: Whereas Charles Corcellis, gent., hath by his humble petiĉon represented vnto Vs, That hee hath found out a new way of makeing pitche or tarr, which will preserve shipps from being eaten by worms, of what wood soever they are built, without sheathing the vessell ȼ or makeing vse of tallow or any other matter to carreen them; the said pitch or tarr p̄serving all sort of wood from corrupĉon, and remayning vpon itt sixtimes longer then the ordinary sort without melting in the sun, and for some time resisting even fire: and praying in regard of the great benefitt w^ch^ by meanes thereof will accrue to the publick, Wee would be graciously pleased to grant him Our Letters Patents for the sole vse of his said invenĉon, We have thought fitt to condescend to his said request. Witnes the King, at Westm̄, Decimo septimo Die Octob̄.

From Letters Patent—**Rolls Chapel.**

A.D. 1686 . . . . N° 249.

DUPIN, CARDONELS, GRUCHY, REGNAULT, MAY AND SHALES.

Making Paper, and Printing the Royal Arms thereon.

JAMES THE SECOND, &c. To all to whome these presents shall come, greeting: Whereas Nicholas Dupin, Adam de Cardonels, Chas. de Gruchy, Marin Regnault, James de May, and Robert Shales, have by their humble petiĉon represented to Us in council, That being encouraged by Vs to improve the art of makeing all sorts of writeing and printing paper, and to imprint Our armes vpon such paper, they have lately brought out of France excellent workemen, and have already sett vp severall new invented mills and engines for makeing thereof not heretofore vsed in England, and made severall quantities of paper, haveing been at vast charges in the ꝑmisses engageing the French artificers to instruct in the said art such English psons as the petiĉoners shall take apprentices, and prayd Vs to grant them Letters Patents for the sole exerciseing the said art.

From Letters Patent—**Rolls Chapel.**

A.D. 1687 . . . . N° 253.

CLERK, BRENT, AND CLERK.

Furnaces for Extracting Metals from their Ores.

JAMES THE SECOND, &c. Whereas Our trusty and welbeloved Sir Robert Clerk, Knight, Robert Brent and Talbot Clerk, Esquires, have by their humble petiĉon informed Vs, That with great expence and labour they have found out a new invention, being severall sorts of furnaces, vessells, wayes, and meanes that never before were knowne, for the cheaper extracting all mettaline bodies, perticulerly gold, silver, copper, lead, and tinn, out of their oares or minerals, and reduceing them into their respective malleable mettalls, and by the said wayes gold and silver is taken out of lead and its ore without the leads being diminished in value, gold and silver in like manner out of copper and its ore without the coppers being diminished in value, gold sepated from silver at small charges, and many oares and minerals of gold, silver, copper, lead, and tinne, that are soe poore in reyallmetall as heretofore they wold not beare the expence and charge of seperateing, will by these meanes be wrought to very great profitt.

From Letters Patent—**Rolls Chapel.**

A.D. 1687 . . . . N° 254.

KENT, DAVENANT, AGAR, WARTER, HALE AND HALE.

Making Rolled Sheets of Lead.

JAMES THE SECOND, by the Grace of God King of England, Scotland, France, and Ireland, Defender of the Faith, &c. To all to whome these ꝑsents shall come, greeting: Whereas Wee are informed, That Sir Philip Howard, Knight, deceased, and Francis Watson, Esquire (now Sir Francis Watson, Knight), haveing found out a new manufacture, art, or invention, by a certaine engine or rollers, to draw, roll, or mill plates or sheets of lead by

them cast or prepared for that purpose, did at the Session of Parliament, holden at Westminster, in the two and twentieth yeare of the reigne of Our dearest Brother King Charles the Second, of blessed memory, obteine an Act of Parliament for the sole vse and exercise of the said invencon for the sheathing and preservacon of shipps and shipping onely, to continuing for five and twenty yeares to them, their executors, administrators, and assignes: And whereas Wee are likewise informed, that the right and tytle to the said worke or invention and Act of Parliament is come to the hands of Richard Kent, Esquire, Charles Davenant, Doctor of Laws, Thomas Agar, Esquire, John Warter, Thomas Hale, and Michael Hale, Gentlemen, who, haveing humbly represented vnto Vs that since the passing of the said Act they doe finde the said manufacture, worke, or invention of mill'd lead may be of good vse for many other purposses as well as sheathing of shipps, and they haveing by their humble peticon besought Vs to grant to them the sole vse and exercise of the said invencon for the purposes aforesaid, for the terme of fourteen yeares, according to the statute in that case provided, Wee are gratiously pleased to condescend to their said humble suite.

From Letters Patent—**Rolls Chapel.**

A.D. 1688 . . . . N° 261.

CLOWDESLY, SHERARD, AND DUCLEN.

Weaving Silk Goods.

JAMES THE SECOND, by the Grace of God, &c. To all to whom these ꝑsentꝭ shall come, greeting: Whereas our trusty and welbeloved subiectꝭ, Paul Clowdesly, William Sherard, and Peter Duclen, have by their humble peticon reꝑsented vnto Vs, That whereas severall black plaine sortꝭ of silkꝭ, called by the name of alamodes, ranforcees, and lutestringꝭ, have been made at Lyons, in France, onely, and from thence this kingdome and other partꝭ have been furnished therewith; that they or some of them had, with great industry and charge, found out and attained to the knowledg of makeing, dressing, and lustrateing the same in this Our realme; and have humbly prayed Vs to grant vnto them Our Letters Patentꝭ for the sole vse and benefitt thereof during the terme of fourteen yeares, according to the statute in that case ꝓvided: And Our royall will and pleasure is, that all and every the aforesaid deputies, servantꝭ, agentꝭ, and workmen, or any other psons whatsoever who shall at any tyme during the said terme of fourteen yeares, by virtue of these Our Letters Patentꝭ, exercise or weave the said black plain alamodes, ranforcees, lutestringꝭ, silk, or any of them within London, and twenty miles distance of the said citty, shall be such persons onely as have lawfully served as apprentices to the said art of weaving, and as shall from time to time be members of the said corporacon of weavers, London: Provided always, and Our will and pleasure is, and the said Paul Clowdesly, William Sherard, and Peter Duclen, for themselves, their executors, administrators, and assignes, do covenant and promise to and with Vs Our heires and successors, in manner following; (that is to say,) that they the said Paul Clowdesly, William Sherard, and Peter Duclen, their executors, administrators, agentꝭ, servantꝭ, or assigns, or some of them, shall and will, once in every three moneths, during the effect and continuance in force of this Our grant, make and give vpon their or some of their oath or oaths, to be taken before one or more of the Barons of Our Exchequer for the time being, true and just accountꝭ, to the best and vtmost of their respective knowledges and beleifes, vnto such pson or psons as by Vs, Our heires or successors, or by the comissioners of Our treasury now being, or the high treasurer or comissioners of the treasury for the time being, of Vs, Our heires or successors, shall be by writeing in that behalfe appointed of the number and length of the respective peices of silkꝭ aforesaid, made, lustrated, and dressed from time to time by them the said Paul Clowdesly, William Sherard, and Peter Duclen, their executors, administrators, and assignes, or their agentꝭ, workmen, or servantꝭ, by virtue of these Our Letters Patentꝭ, and

of the number of looms, and of the severall persons names who shall from time to time in pursuance of this Our grant be employed in making, lustrateing, and dressing of the said silkꝭ, with the respective places of their abodes: And further, that they the said Paul Clowdesly, William Sherard, and Peter Duclen, their executors, administrators, and assignes, or some of them, shall and will, once in every three moneths during the effect and continuance in force of this Our grant, well and truely pay or cause to be paid for the vse of Vs, Our heires and successors, vnto such pson or psons as by Vs, Our heires or successors, or by the coñissioners of Our treasury now being, or by the high treasurer or coñissioners of the treasury for the time being, of Vs, Our heires and successors, shall be by writeing in that behalfe appoynted the suñe of two shillingꝭ of lawfull money of England for each peice of the said silkꝭ, not exceeding the length of sixty ells, which shall be made, lustrated, or dressed as aforesaid by them the said Paul Clowdesly, William Sherard, and Peter Duclen, their executors, administrators, or assignes, or their agentꝭ or workmen, by force or vertue of these Our Letters Patentꝭ, and so ꝓporc̃onably for any peice above sixty ells long: And the said Paul Clowdesly, William Sherard, and Peter Duclen do further covenant with Vs by these ꝑsentꝭ, that they or some of them, their or some of their executors, administrators, and assignes, shall forthwith deliver vnto Vs such an account in writing of the whole mistery of lustrateing or dressing the said silkꝭ, so that a master weaver may on pvsall of the said account be able effectually to dresse and lustrate any the silkꝭ aforemenc̃oned (yet not to do the same during the continuance in force of this Our grant, contrary to the purport or effect thereof): And the said Peter Duclen doth by these ꝑsentꝭ covenant, promise, and grant to and with Vs, Our heires and successors, that he the said Peter Duclen shall and will forthwith teach and fully instruct the ꝑsent wife of him the said Peter Duclen being an English woman, in the said art or invenc̃on, and shall and will also bring up and instruct one or more of his children, borne in England, in the ex̃cise andpractice thereof; and that he the said Peter Duclen shall in like manner discover and shewvnto the said Paul Clowdesly and William Sherard, his partners, his vtmost knowledge and skill in the said art, invenc̃on, or manufacture which he hath not yet disclosed to them, and shall and will so instruct them therein as to make them pfect and absolute masters of the said art, manufacture, or invenc̃on, for the better advantage, practiceing, and ex̃ciseing of the same, in case they or either of them be yet deficient in any thing relateing therevnto: And the said Paul Clowdesly, William Sherard, and Peter Duclen, for themselves, their executors, administrators, and assignes, do further covenant and promise to and with Vs, Our heires and successors, by these ꝑsentꝭ, that they the said Paul Clowdesly, William Sherard, and Peter Duclen, their executors, administrators, or assignes, or some of them, shall and will, at the expirac̃on of seaven yeares next ensueing the date of these Our Letters Patentꝭ, take and entertaine three persons, being Our naturall borne subiects, to be their apprentices to the said arte or mistery for the terme of seaven yeares at the least; and shall and will in like manner, at the end of tenn yeares next ensueing the date of these ꝑsentꝭ, take and entertaine three other psons, being also Our natural borne subjectꝭ, for the terme of seaven yeares at the least, to be apprentices to the said art or mistery; and shall and will from time to time, dureing the said respective termes of seaven yeares at the least, well and pfectly teach, instruct, and bring vp the said severall apprentices in the knowledge and ex̃cise of the said art, mistery, or invenc̃on, so as to make them absolute masters of the same: Provided always, that if at any time dureing the continuance of this Our grant in force it shall happen that any of Our subiectꝭ or any forreigners (except such psons as have learned thesaid art from thesaid Paul Clowdesly, William Sherard, and Peter Duclen, theire executors, administrators, or assignes, or some of them) shall ꝑsent him and themselves to Vs, or vnto the coñissioners of Our treasury now being, or the treasurer or coñissioners of the treasury of Vs, Our heires or successors, for the time being, and that on a full hearing of both parties before Vs, Our heires or successors, such pson or psons ꝑsenting him or themselves as aforesaid shall make it appeare that he or they are masters of the whole art of makeing, lustrateing, and dressing the said lutestringꝭ, ranforcees, and alamodes, and shall ꝓduce one or more peice or peices of the said silkꝭ by him or them made, lustrated, and dressed to the same perfec̃on with any of the said respective silkꝭ made, lustrated, and dressed by the said Paul Clowdesly, William Sherard, and Peter Duclen,

their executors, administrators, agentꝭ, or assignes, or any of them, and that such other pson or psons aforesd did not learne or were not instructed in the said art from or by the said Paul Clowdesly, William Sherard, and Peter Duclen, their executors, administrators, agentꝭ, servantꝭ, or assignes, or any of them, that they the said Paul Clowdesly, William Sherard, and Peter Duclen, their executors, administrators, and assignes, shall and will readily take in and employ such pson or psons in the said worke or manufacture, vpon such termes and vnder snch condicons and restriccons as on a hearing of the partyes of both sides Wee, Our heires or successors, shall think fitt to direct and appoint, anything hereinbefore conteyned to the contrary in anywise notwithstanding. Witnesse Ourselfe, at Westm, the Three and twentieth Day of November.

From Letters Patent—**Rolls Chapel.**

A.D. 1689 . . . . N° 262.

SMARTFOOT.

Machine for Raising Goods Sunk in the Sea ("Sea-Crab").

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these psentꝭ shall come, greeting: Whereas Our trusty and welbeloved Francis Smartfoot, citizen of London, hath by his humble peticon repsented vnto Vs, That with long study and great expence hee hath found out a new invencon, or sea crabb, for working in the sea, for fishing and takeing vp of shipps, gunns, and goodꝭ lost and foresaken, with more facility then hath yet been attained by any, and hath humbly besought Vs to grant him Our Letters Patentꝭ for the sole working of the said engine or sea crabb in all the seas within our dominions, (except from the Northforeland to the westward of the Lizard and Islandꝭ of Scilly,) for the terme of fourteen yeares, according to the statute in that case ꝓvided; which said peticon Wee having been gratiously pleased, by Our Order in Councill, dated the two and twentieth day of July last past, to referr to the examinacon of the principall officers and comissioners of Our navy, to certify to Vs whether the same be a new invencon, together with their opinion therevpon. They have accordingly made report vnto Vs, that they had viewed the said engine, and are humbly of opinion that it is a new invencon, and that it may be vsefull for the weighing or taking vpp shipps, gunns, and other thingꝭ out of the sea, as in the said peticon is settforth; and that they have also seen another invencon of the peticoner for a man's breathing vnder water in a paire of lungꝭ fixed to his back as hee swims, and do humbly conceive the same may be of vse to the said engine.

From Letters Patent—**Rolls Chapel.**

A.D. 1691 . . . . N° 267.

GREENE.

Hanging Coaches and Chariots.

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas Our trusty and welbeloved John Greene, gentleman, hath humbly represented vnto Vs, That at great exence and study hath invented a new carriage and way of hanging coaches and chariots, which, for ease and safety of rideing, turning in narrow streetes or lanes, and manner of coachman's setting differs from and exceedꝭ all that were ever yet made or invented, and notwithstanding the rough and vnevenesse of any pavements or road, the rideing will be very neare as easie as in a chaire or sedan, and altogether as safe, the body hanging perpendiculer, though the wheeles should overturne; and therefore praying Vs to grant him Our Letters Patents for the sole vse of such his invencon.

From Letters Patent—**Rolls Chapel.**

A.D. 1692 . . . . N° 286.

MARSHALL AND TESHMAKER.

Making Spinnall Yarns.

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these ꝑsents shall come, greeting: Whereas Ralph Marshall and John Englebert Teshmaker have by their humble petition represented vnto Vs, That the makeing of spinall yarne is a new invention never practiced here before, and that they have at their great cost and charges erected a bucking house, fitted and prepared a whiteing ground, brought severall workmen out of Germany educated and skilled in makeing the said spinnall, and hazarded severall hundred pounds worth of browne yarne, to try the experiment whether the air, water, and other materialls vsed for doeing the same would be proper and effectuall here in England, which has been found fully to answer their expectation, and to be nothing inferior to those in Germany, whereby a great quantity of the flax and yarne of the growth and manufacture of this our kingdome may be imployed which is now supplyed from beyond the seas, and severall poore people sett at worke; and hath humbly prayed Vs to grant them Our Letters Patents for the sole vse thereof for the terme of fourteen yeares, according to the statute in that case made and provided: Know yee therefore, that Wee, being willing to cherish and encourage all laudable endeavours and desiignes of such Our subiects as have by their industry found out vseful and profitable arts, misteries, and inventions, and that the said Ralph Marshall and John Englebert Teshmaker may accordingly reape some fruite and benefitt of their labour and charge in and concerning the ꝑmisses, of our especall grace, certaine knowledge, and meere moc̃on, have given and granted, and by these presents doe give and grant, vnto the said Ralph Marshall and John Englebert Teshmaker, their executors, administrators, and assignes, especial lycence, power, priviledge, and authority, that they, by themselves and by their deputies, servants, agents, and workmen, and such others onely as they the said Ralph Marshall and John Englebert Teshmaker, their executors, administrators, and assignes, shall agree with, shall and may from time to time and at all times hereafter, dureing the space of fourteen yeares next ensuing the date of these presents, at their own proper costs and charges, erect, vse, teach, exercise, and put in practice the said new invention soe by them or one of them contrived and found out as aforesaid, in any place or places within our kingdome of England, dominion of Wales, and town of Berwick-vpon-Tweed, and alsoe shall and may receive, take, and enioy all the benefitts, profitts, com̃odities, and advantages of and by the said new invention to be had, made, acquired, or gotten, to their own proper benefitt, vse, and vses. Witnesse Ourselves, at Westminster, the Eleaventh Day of January.

From Letters Patent—**Rolls Chapel.**

A.D. 1692 . . . . N° 289.

MARSHALL AND TESHMAKER.

Making Spinnall Yarn.

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these ꝑsents shall come, greeting: Whereas Ralph Marshall and John Englebert Teshmaker have by their humble petic̃on represented vnto Vs, That the makeing of spinnall yarne is a new

invention never pracised here before, and that they have, at their great cost and charges, erected a buckinghouse, fitted and prepared a whiteing ground, brought severall workmen out of Germany educated and skilled in makeing the said spinnall, and hazarded severall hundred pounds worth of brown yarne, to try the experiment whether the air, water, and other materialls vsed for doing the same would be proper and effectuall here in England, which has been found fully to answer their expectacon, and to be nothing inferiour to those in Germany, whereby great quantity of the flax and yarne of the growth and manufacture of this Our kingdome may be imployed which is now supplied from beyond the seas, and severall poore people sett at worke, and have humbly prayed Vs to grant them or one of them Our Letters Patents for the sole vse thereof for the terme of fourteen yeares, according to the statute in that case made and provided: Know yee therefore, that Wee, being willing to cherish and encourage all laudable endeavors and designes of such our subiects as have by their industry found out vsefull and profittable arts, misteries, and inventions, and that the said Ralph Marshall and John Englebert Teshmaker may accordingly reape some fruit and benefitt of their labour and charge in and concerning the premisses, of Our especiall grace, certaine knowledge, and meere mocon have given and granted, and by these psents doe give and grant, vnto the said Ralph Marshall, his executors, administrators, and assignes, especiall lycence, power, priviledge, and authority, that he and they, by themselves and by their deputies, servants, agents, and workmen, and workmen, and such others onely as the said Ralph Marshall his executors, administrators, and assignes shall agree with, shall and may from time to time and at all times hereafter, dureing the space of fourteen yeares next ensueing the date of these presents, at his and their own proper costs and charges, erect, vse, teach, exercise, and put in practice the said new invention soe contrived and found out as aforesaid, in any place or places within our kingdome of England, dominion of Wales, and town of Berwick-vpon-Tweed; and alsoe shall and may receive, take, and enioy all the benefitts, profitts, coffiodities, and advantages of and by the said new invention to be had, made, acquired, and gotten, to his and their own proper benefitt, vse, and vses.

From Letters Patent—**Rolls Chapel.**

A.D. 1692 . . . . N° 305.

GIFFORD.

Printing and Ornamenting Papers.

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas Our trusty and welbeloved Nathaniel Gifford hath by his humble peticon represented vnto Vs, That he haveing lately obtained Our Letters Patents under Our Great Seale for the sole makeing of all sorts of blew, purple, and other coloured papers, by such waies, methods, engines, and instruments as never were before vsed within Our dominions, by some neglect the words beautifying, figuring, imprinting, and imbellishing of the said papers were omitted in Our warrant for the said Letters Patents, which words have a perticular respect to the engines and instruments vsed in the said Nathaniel Gifford's invention, whereby the said Letters Patents may seeme to be defective in expressing the said invention, and that he the said Nathaniel Gifford is the first and true inventor of the said engines and instruments for the vses aforesaid, and at his great industry and expence contrived the same for the beautifying, figureing, imprinting, and imbelishing of the said papers, and hath humbly prayed Vs to grant him Our Letters Patents for the sole

vse thereof: Know yee therefore, that Wee, being graciously pleased to condescend to that his requst, and willing to incourage the inventers of such arts as may be of publick vse and benefitt, of Our especiall grace, certaine knowledge, and meer motion have given and granted, and by these presents for Vs, Our heires and successors, doe give and grant, vnto the said Nathaniel Gifford, his executors, administrators, and assignes, speciall ycence, full power, sole priviledge, and authority, that he the said Nathaniel Gifford, his executors, administrators, and assignes, and every of them, by themselves or his or their deputy and deputies, servants or agents, or such others as the said Nathaniel Gifford, his executors, administrators, or assignes, shall at anytime agree with, and noe others, from time to time and at all times dureing the terme of yeares herein expressed, shall and lawfully may make, vse, exercise, and enioy the said invention of beautifying, figureing, imprinting, and imbellishing of all sorts of blew, purple, and other coloured papers by the engins and instruments aforesaid, within any part or parts, places whatsoever, of, in, or belonging to Our kingdome of England, dominion of Wales, and towne of Berwick-vpon-Tweed, and all and every or any of Our kingdomes and dominions whatsoever, in such manner and according to such reasonable and lawfull rates and lymittations as to him the said Nathaniel Gifford, his executors, administrators, and assignes, or any of them, shall in their discretions seeme meet. Witnesse Our Selves, at Westminster, the Ninteenth Day of October.

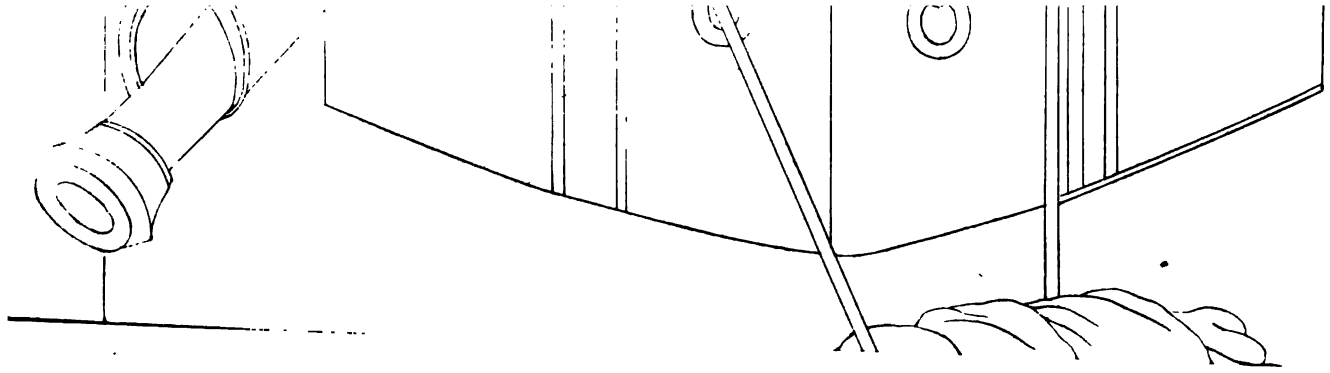
From Letters Patent—**Rolls Chapel.**

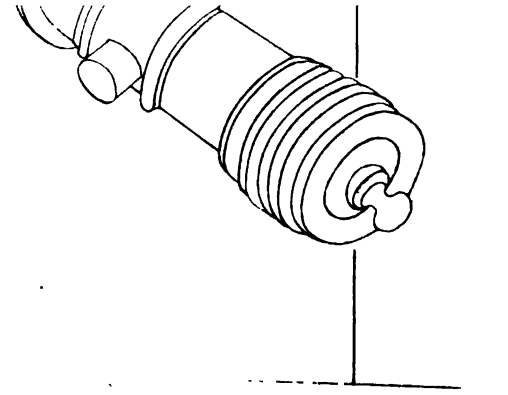
A.D. 1692 . . . . N° 307.

HUTTON.

Mill for Making Paper; Draining and Raising Water.

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas Our trusty and welbeloved Thomas Hutton, gentleman, hath by his humble peticon represented vnto Vs, That he hath been at great charge and expense in discovering a new way of makeing paper, in great quantities and with less charge and labour and more advantage then ever hath been yett practised in England or elsewhere, by a mill or engine, to be driven either by winde, sailes, or water wheeles, and to worke eighty or more stampers at once, different from all other mills now vsed, both for forme, operation, and vse, which new invented mill hath alsoe another new invented engine apperteyning to it for the raiseing great quantities of water, singularly vsefull in the draining coale mines, lead mines, and other like dreynings or water riseing; and praying Vs to grant him Our Letters Patents of Priviledge for the sole working and haveing the sole benefitt of the said severall new inventions for the terme of fourteene yeares, according to the statute in that case provided: And whereas by an Act of Parliament made in the second yeare of Our reigne, for the encouragcing and better establishing the manufacture of white paper in this kingdome, the sole makeing of all sorts of white writeing and printing paper of above four shillings the rheam is appropriated to the said Company of White Papermakers in England, for the terme of fourteen yeares, to comence from the end of that session of Parliament; and Wee being informed by the said Thomas Hutton that the mill or engine in the petition mentioned is designed for the makeing of all sorts of paper not prohibited by the said Act of Parliament: Know ye therefore, that Wee, being willing to cherish and encourage all laudable endeavours and designes of such Our subiects as have by their industry found out vsefull and profitable arts, misteries, and inventions, and that the said Thomas Hutton may accordingly reape some fruite and benefitt of his labour and charge in and concerning the premisses, of Our especiall grace, certaine knowledge, and meer motion have given and granted, and by these presents doe give and grant, vnto the said Thomas Hutton, his executors, administrators, and assignes,





A . D . 1692 . MARCH 24 . Nº 308.

WILLIAMS' DRAWING.

(Appended to Signet Bill.)

(1 SHEET)

especiall lycence, power, priviledge, and authority, that he and they, by him and themselves, and by his and their deputies, servants, agents, and workmen, and such others onely as the said Thomas Hutton, his executors, administrators, and assignes, shall agree with, shall and may from time to time and at all times hereafter, dureing the space of fourteen yeares next ensueing the date of these presents, at his and their own proper costs and charges, erect, vse, teach, exercise, and put in practice the said new inventions soe by him contrived and found out as aforesaid for the makeing of all sorts of paper not prohibited by the said Act of Parliament (and not otherwise) in any place or places within Our kingdom of England, dominion of Wales, and town of Berwick vpon Tweed, and also shall and may receive, take, and enioy all the benefitts, profitts, comodities, and advantages of and by the said new inventions to be had, made, acquired, or gotten to his and their own proper benefitt, vse, and vses. Witnesse Our Selves, at Westminster, the Twenty fourth Day of March.

From Letters Patent—**Rolls Chapel.**

A.D. 1692 . . . . N° 308.

WILLIAMS.

Diving Engine for Taking up Wrecks and Ships Lost in the Sea.

WILLIAM AND MARY, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas John Williams, of Exeter, hath by his humble petition represented unto Us, That he hath by his industry and at his great charge and expence found out and invented a new engine (the modell whereof is hereunto annexed) for the carrying of four men fifteen fathom and more under water in the sea, whereby they may work twelve hours togeather without any danger; which said engine will be of great use and advantage for the takeing up of wrecks and shipps that have been and shall be lost in the sea. Signet Bill, dated 27th February, 1691.

From Signet Bill—**Rolls Chapel.**

A.D. 1692 . . . . N° 310.

SMITH.

Heating Water for Melting and Refining Sugars.

Shall and lawfully may make, vse, exercise, and enioy, within Our kingdomes of England and Ireland, and dominion of Wales, and town of Berwick-upon-Tweed, or any other Our dominions, the said invention of boyling and heating waters and all other liquors, as alsoe of melting and refineing sugars, and all other things that may be done by fire, and by communicateing the heat of a small quantity of any hot or boyleing liquors in a short time to any greater quantities. Witnesse Our Selves, at Westminster, the Twenty fourth Day of March.

From Letters Patent—**Rolls Chapel.**

A.D. 1693. . . . . N° 312.

HODGESON.

Engine for Raising Water and Pumping Ships.

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas Marmaduke Hodgeson, gentleman, hath by his humble petition represented vnto Vs, That he hath, after a very great charge and expence in tryalls and experiments in order thereunto, arrived to the perfecc̄on of makeing a motion worke or engine, by himselfe invented, and different from any other hitherto practised or in vse in Our dominions, whereby water or other liquors may be raised and discharged in the greatest quantities, and from any depth to any heighth, given in much shorter time and with farr lesse cost and charges then any other engines hitherto have done or can performe, and that without the strength of men, horses, wind, streame, or current, besides that of its own raiseing; which said motion, worke, or engine may and will in all probability prove of very great and considerable vse to the publick as to the preserveing leaky shipps and vessels from sinking, and to the freeing and clearing them of water if sunk, in order to their weighing vp and recovery, and whereby fenns and morasses may be likewise drained, overflown mines and coalepitts rendered againe fitt to be wrought in, moates filled or emptied, the same being yett further improveable to many other beneficiall purposes and vses in cities, townes, fortresses, and elsewhere.

From Letters Patent—Rolls Chapel.

A.D. 1693 . . . . N° 318.

STAPLETON.

Two Diving Machines; Purifying Air in the same; Supplying them with Air.

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas John Stapleton, gentleman, hath by his humble petition represented vnto Vs, That he hath at his great study and expence invented a new and extraordinary engine of copper, iron, or other mettall, with glasses for light, and joynts soe contrived as to permit a person enclosed in it to walke and move freely with it vnder water, and yet so closely covered over with leather as sufficiently to defend him from all the jumpes of it; and hath alsoe invented a way to force air into any depth of water, whereby the person in the aforesaid engine may be supplied with a continuall current of fresh aire, which not onely serves him for respiracon, but may also be vsefull for continuing a lamp burning which he may carry about with him in his hand, and may be thence conveyed into large vessells whereby anything will be raised to the superfices of the water to which the said vessels are fastned; and hath also invented another engine which will swim vpon the water in the most violent stormes, and being inverted and supplied with air as the other engine, a person inclosed therein may sinke to the bottom and asscend againe at pleasure; and hath likewise away to defecate or purify the air so as to make the same againe serviceable for respiracon, and by continually repeating the opperacon a man may remaine a long time vnder water in either of the said engines without any other air then what the said engines do conteyne, whereby he will be preserved from suffocation if any extraordinary accident should interupt the current of fresh air afore menc̄oned; which said invenc̄ons may be of great vse for the weighing and takeing vp of ships, gunns, goods, and other things of any burthen, bulke, or weight, or in any depth of water whatsoever. Witnesse Our Selves, at Westminster, the Thirteenth Day of April.

From Letters Patent—Rolls Chapel.

A.D. 1693 . . . . N° 319.

LOFTING.

Instrument for Making Thimbles.

WILLIAM AND MARY, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas John Lofting hath by his humble petiĉon represented vnto Vs, That the great dutys charged vpon all thimbles imported from beyond the seas doth much discourage the merchants from bringing the same over, soe that the price of that coñodity will come to be enhansed vpon Our subiects, and that in Germany and other forreigne parts whence they have been heretofore imported into this kingdome they are vsually made by a certaine engine or instrument hitherto vnknowne in Our dominions; and hath humbly prayed Vs to grant him Our Letters Patents for the sole priviledge of makeing and selling the said engine or instruement.

From Letters Patent—**Rolls Chapel.**

A.D. 1697 . . . . N° 352.

OLDNER AND PRIME.

Pumps and Contrivances for Preserving Ships and Vessels from the Effects of Leakage.

WILLIAM THE THIRD, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas Our trusty and welbeloved George Oldner, senior, and Andrew Prime, senior, of London, merchants, have by their humble petitions represented vnto Vs, That they have or one of them hath lately found out a new invention for the better preserveing of all sorts of shipps or vessells for navigation, already built or hereafter to be built, from foundering at sea, or in any harbours, bays, rivers, or creeks, by reason of any leakes from great shott, or by wormholes, or by want of good cawking, or by the decay of cawking, or by the decay of bolts, trunnells, or plank, or by the starting or springing of the butts of planks and of hurd endȩ, to be effected by a contrivance of worke to be done in the inside of any ship or other vessell for navigation (and that the said contrivance of worke will neither hinder the saileing nor the stowage), by meanes whereof all water that may enter the hold of the ship or vessell by reason of any leake shall, in most if not all cases, be freed or cast out by two pumps, part of the said invention, that shall not take vp more roome nor require more strength than coñon pumps.

From Letters Patent—**Rolls Chapel.**

A.D. 1702 . . . . N° 368.

LYDALL.

Fluxes for Smelting Tin in a Reverberatory Furnace, without using Bellows.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Robert Lydall, gentleman, hath by his humble petition represented vnto Vs, That by his long study and at his great expence he hath found out and broght to perfeccon a new way of smelting and melting black tinn into good merchantable white tinn in a reverberatory furnace, without the help of bellows, by meanes of some peculiar fluxes, whereby not onely a greater produce of white tinn is made out of the black tinn, and with lesse charge then vsuall, but also the consumpcon of wood and charcoal, which in smelting and melting black tinn into white tinn hath been very great, will be thereby much lessened.

From Letters Patent—**Rolls Chapel.**

A.D. 1704. . . . . N° 372.

COLE.

Making Lamp Glasses for Diffusing Light.

ANNE, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas Our trusty and welbeloved Richard Cole, gentleman, hath by his humble peticon represented vnto Vs, That he hath by his long study and application, and at his great expence and charge, discovered a new and extraordinary way or invention of forming glasses in conicall figures and lamps peculiar to himselfe, that will to admiracon increase, disperse, and cast light equally and certainly, at all convenient distances, never before vsed or knowne, and no wayes subiect to the glaring and incertainty of the lights now cheifly vsed; and that the said invencon will very much tend to the publick good of all Our subiects in the time of night, to be vsed not only in streets and other publick and private places, but also in mines and quarries vnder ground, and in ships at sea, without the least danger of any accident by fire to happen thereby. Witnesse Our Selfe, at Westminster, the Nineth Day of July.

From Letters Patent—**Rolls Chapel.**

A.D. 1705 . . . . N° 374.

LYDDALL.

Precipitating Gold and Silver from Tin, and Smelting Tin with Culm and Sea-Coal.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Robert Lyddall, of Truro, in Our county of Cornwall, gentleman, hath by his humble peticon represented vnto Vs, That he hath by his great study, paines, and expence found out and brought to perfeccon a new art, method, or invencon of

seperating and refining gold and silver from tynn by precipitacon, and likewise for melting and smelting black tynn oar into good merchantable white tynn, with culm and sea coal, in a blast furnace called Ignifurens, whereby much more gold and silver may be obtained, and more white tinn melted from the oar, and much cheaper, then can be produced by any method now in vse, to the great enriching of Our countyes of Devon and Cornwall in particular, and Our whole kingdom in generall.

From Letters Patent—**Rolls Chapel.**

A.D. 1706 . . . . N° 375.

PECK.

Making and Refining Salt in a Reverberating Air-Furnace to save Fuel.

ANNE, by the Grace of God Queene of England, Scotland, France, & Ireland, Defender of the Faith, &c. To all to whom these p̄sents shall come, greeting: Whereas Our trusty and welbeloved Daniel Peck, of the city of Chester, gentleman, hath by his petition humbly represented vnto Vs, That he hath by his great study and expense invented and perfected a new and more easy method for the better makeing and refining of white salt, for all vses, from sea water brine, springs, and rock salt, either in iron, lead, or copper panns, over a reverberating air furnace or furnaces, whereby a much lesse quantity of coal or other fuell is expended than by any other method now vsed for the makeing of such salt.

From Letters Patent—**Rolls Chapel.**

A.D. 1706 . . . . N°. 376.

MILL.

Springs for Coaches, Chariots, and other Vehicles.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Henry Mill, gent., hath by his peticon humbly represented vnto Vs, That he hath by his great study and paines & expence invented and found out a new mathematicall instrument, consisting of new sorts or kinds of springs for the ease of persons riding in coaches, chariotts, calashes, and chaises, absolutely differing from the springs now vsed, which are placed below at the corners of coaches, chariotts, calashes, this being made to be placed and fixed vnto, betweene, and within the main leather braces, by which the bodyes of coaches, chariotts, calashes, and chaises are hung, being likewise inviron'd or incompassed with the said leather braces, and being placed or fixed in or very neare the middle of the said braces, forcing them, in their vse and operation, to open somewhat like a rhombus or lozenge; and that the said new invented springs are made and contrived of several forms, viz^{t}, semicircular, circular, angular, ovall, or of various other forms, a small iron rodd or pinn running thro' the middle or extremities of the same springs, and may be putt on or taken off at pleasure in the space of halfe an hour; and which invencon is very much lighter than the said springs now in vse, a sett of those generally weighing about one hundred and twenty pounds, and a sett of these not exceeding twenty pounds weight, and may be sold at farr lesse charge, and will alsoe be of greater ease and benefitt to all persons vsing the same, than the aforesaid springs now vsed, or any other arts or inventions whatsoever serving to the like purposes.

From Letters Patent—**Rolls Chapel.**

A.D. 1706 . . . . N° 379.

SAVERY.

Making Double Hand Bellows.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Thomas Savery, Esquire, hath by his humble petiçon represented vnto Vs, That by his industry, study, and expence, he hath found out and brought to perfection a new way of making double hand bellows, which, by the power of springs and screws, produces a continual blast, notwithstanding the suction, by which any sort of mettle may be melted in a coñon wood or coal fire, and will be very vsefull for making and raising fires in all private families, and also to all persons working in mettle and oar, in as much as any oar may be melted down by its proper flux by the help of these bellows in a coñon chimney, without being at the accustomary charges of making essay furnaces. Witnes Our Self, at Westminster, the Twentieth day of February.

From Letters Patent—**Rolls Chapel.**

A.D. 1707 . . . . N° 380.

DARBY.

Casting Iron Bellied Pots in Sand only.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Abraham Darby, of Our city of Bristol, smith, hath by his petition humbly represented vnto Vs, That by his study, industry, and expence he hath found out and brought to perfection a new way of casting iron bellied potts and other iron bellied ware in sand only, without loam or clay, by which iron pots and other ware may be cast fine and with more ease and expedition, and may be afforded cheaper, than they can be by the way coñonly vsed, and in regard to their cheapnesse may be of great advantage to the poore of this Our kingdome, who for the most part vse such ware, and in all probability will prevent the merchants of England going to forreign markets for such ware, from whence great quantities are imported, and likewise may in time supply forreign markets with that manufacture of Our own dominions; and hath humbly prayed Vs to grant him Our Letters Patents for the sole vse and benefit of the said invention for the terme of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1708 . . . . N° 382.

COLE.

New Kind of Light (being a Lamp with a Globular Glass).

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Michael Cole, of Our city of Dublin, in Our kingdome of Ireland, gentleman, hath by his petition humbly represented vnto Vs, That he hath with great industry, paines, and expence found out and brought to perfection a new kind of light (quite different from any yet in vse) composed of one entire glass of a globular shape, with a lamp, which will give a clearer and more certain light from all parts thereof, without any dark shadows or what else may be confounding or troublesome to the sight, than any other lamps that have hitherto been in vse.

From Letters Patent—**Rolls Chapel.**

A.D. 1709 . . . . . N° 384.

SCHMETTAN.

Making Salt.

ANNE, by the Grace of God, &c. To all to whose these presents shall come, greeting: Whereas Samuel Schmettan, gentleman, hath by his petition humbly represented vnto Vs, That by long study and great expence, and by taking particular notice of the manner of makeing salt at Sheild℄, near Newcastle vpon Tine, and other places, by boyling it with coales, he hath found out a better method in boyling thereof, by which meanes it may be made at lesse charge and afforded at lower rates than formerly, and consequently may occasion the setling a salt trade with forreign parts, to the preiudice of France and to the advantage of Our subiects in general; and having (as he the said Samuel Schmettan humbly conceives) acquired so much experience in the management of salt works and making of salt of salt water as to be able to shew such a method in boyling it as will answer the end above mentioned, and in time bring it to greater perfection, the said Samuel Schmettan humbly proposes to make the first tryal at his own expence, and least his labour for the publick good should prove a detriment to him hath humbly besought Vs to grant him Our Letters Patents for the sole vse and exercise of the said new invented method in making salt for the term of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1709 . . . . . N° 385.

WEISEHAMER.

Mill for Grinding Sugar Canes.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Jeremiah Weisehamer, of Our island of Jamaica, has by his humble petition represented vnto Vs, That he has been an inhabitant of Our said island near twenty yeares, and observing the great expence and labour the planters there were obliged to in their sugar mills for pressing and grinding the sugar canes, every sugar mill requiring for the service thereof forty oxen, which mills are found to be of so hard a draught that they kill twenty or thirty oxen yearly, to the damage of the proprietors and discouragement of new beginners; that the said Jeremiah Weisehamer by many yeares study and industry, and with great charge before he could bring his proiect to perfection, hath invented a mill or engine which grinds and presses the sugar canes, and answers all the end℄ of the antient and present mills in vse, and will be performed by eight or ten horses or cattle at most; that he is come over from Our said island of Jamaica, at great expense, to beg Our most gracious favour toward℄ his new invention, he being encouraged by the planters of Our said island, who are sensible of the advantage that will accrew to them thereby; and therefore the said Jeremiah Weisehamer hath humbly besought Vs to grant him Our Letters Patents for the sole makeing the said new invented sugar mills throughout Our dominions in America for the terme of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1706 . . . . N° 379.

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Making Double Hand Bellows.

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From Letters Patent—**Rolls Chapel.**

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From Letters Patent—**Rolls Chapel.**

A.D. 1709 . . . . N° 385.

WEISEHAMER.

Mill for Grinding Sugar Canes.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Jeremiah Weisehamer, of Our island of Jamaica, has by his humble petition represented vnto Vs, That he has been an inhabitant of Our said island near twenty yeares, and observing the great expence and labour the planters there were obliged to in their sugar mills for pressing and grinding the sugar canes, every sugar mill requiring for the service thereof forty oxen, which mills are found to be of so hard a draught that they kill twenty or thirty oxen yearly, to the damage of the proprietors and discouragement of new beginners; that the said Jeremiah Weisehamer by many yeares study and industry, and with great charge before he could bring his proiect to perfection, hath invented a mill or engine which grinds and presses the sugar canes, and answers all the endᵩ of the antient and present mills in vse, and will be performed by eight or ten horses or cattle at most; that he is come over from Our said island of Jamaica, at great expense, to beg Our most gracious favour towardᵩ his new invention, he being encouraged by the planters of Our said island, who are sensible of the advantage that will accrew to them thereby; and therefore the said Jeremiah Weisehamer hath humbly besought Vs to grant him Our Letters Patents for the sole makeing the said new invented sugar mills throughout Our dominions in America for the terme of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1711 . . . . N° 389.

HANCOCK.

Iron Boxes for the Wheels of Carriages.

ANNE, by the Grace of God, &c. Whereas Our trusty and welbeloved subiect, Daniel Hancock, founder, hath by his humble petiõn represented vnto Vs, That he hath with great pains and industry, and at a very considerable expense, found out a new invenõn for makeing a more vsefull sort of iron boxes for the wheeles of all manner of carriages, called open boxes, viz^{t}, one sort of boxes called the body box, which haveing the edge next towards the lime pin cyphered off does not bear close vpon the clout of the axletree, but lyes hollow or open, to prevent cutting the clouts, and for the better receiving of the grease, which renders the rotation of the wheel more easy, and one other sort, with both edges cyphered off, coñonly called the lime box; that the said invention may be of great vse to the publick in rendring the rotation of the wheeles of all manner of carriages more safe and easy, and in preventing those ill accidents which frequently happen from the sort of boxes now in vse, by their cutting, breaking, and sometimes fireing their axletrees.

From Letters Patent—**Rolls Chapel.**

A.D. 1712 . . . . N° 391.

POWNOLL.

Machine for Taking up Ballast, Sand, &c.

ANNE, by the Grace of God, &c. To all to whome these presents shall come, greeting: Whereas Our trusty and welbeloved Israel Pownoll, of Chatham, in Our county of Kent, hath by his petition humbly represented vnto Vs, That after great paines and expence he hath invented, found out, and brought to perfection a new engine or machine for taking vp of ballast, sullage, sand, &c, from twenty foot deep, more or lesse, vnder water, with a new kind of boat or vessell with a convex or rounding deck, with ports on each side to receive and carry off what the engine brings vp, or as may be otherwise employed for performing its office more expeditiously than any before invented, which will be of very great vse in cleansing rivers, harbours, &c, which stand in great need thereof by their frequent shoalding, by shelves or banks arising from the sullage washed from shoares by the freshes, as also from the marshes, creeks, &c, by the flux, reflux, and setts of the tydes, tempestuous weather, and rapid seas fretting and wearing down the banks, which have rendred many ports vnnavable, and seem to threaten others if not timely prevented; that the said engine differs from any other for the said vse by the scoops, buckets, or vessells being so ordered and contrived on the end of a long pole or boom, that they have a free moc̃on towards and from the center of a wheel they play by, so that they will humor or answer any vnevenness of ground or any variable depth of water within the reach of its shifting moc̃on, which makes it capable of performing its office in places where the tydes or freshes ebb and flow, and not only in standing waters; the said engine may be made to work with one large wheel, or two, fitted to a vessell or vessells prepared accordingly; and having therefore humbly prayed Vs to grant vnto him, his executors, administrators, and assignes, the sole vse, exercise, and benefit of his said new invenc̃on throughout that part of Our kingdom of Great Britain called England, Our dominion of Wales, and town of Berwick vpon Tweed, and within Our kingdom of Ireland, for the term of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1713 . . . . . N° 394.

BIRD.

Drying Malt and Hops.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Michael Bird, citizen and watchmaker, of London, hath by his petition humbly represented vnto Vs, That he hath with great industry, paines, and expense found out and brought to perfection a new method for drying of malt and hops with an engine conveying away the smoake and other offensive smells which arise from the fireing, be it raw sea cole, pitt coale, wood, turf, peat, or any other fire, how nauseous soever in its selfe, whereby the malt will be made extraordinary pale and sweet, exceeding all wayes of making malt hitherto found out and made vse, and the drinke therewith made not only freed from the vsuall offensive scent of fire, but will be also more palatable and gratefull to the tast and consequently more healthfull for the body; that this new method will be of a generall advantage throughout the whole kingdom, and more especially to those who have turfe and peat plenty, but not knowing this method are forced to make their malt with straw, which by this method may be preserved for the manure of their land and other vses, and their turfe and peat burnt in making their malt; and haveing therefore humbly prayed Vs to grant him Our Royal Letters Patents for the said invention for the space of fourteen years.

From Letters Patent—**Rolls Chapel.**

A.D. 1714 . . . . N° 395.

MILL.

Machine for Transcribing Letters.

ANNE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved subiect, Henry Mill, hath by his humble petiĉon represented vnto Vs, That he has by his great study, paines, and expence lately invented and brought to perfection an artificial machine or method for the impressing or transcribing of letters, singly or progressively, one after another, as in writing, whereby all writings whatsoever may be engrossed in paper or parchment so neat and exact as not to be distinguished from print; that the said machine or method may be of great vse in settlements and publick recors, the impression being deeper and more lasting than any other writing, and not to be erased or counterfeited without manifest discovery.

From Letters Patent—**Rolls Chapel.**

ANNE.

Hancock,

AN

Wher

A.D. 1715 . . . . N° 399.

JACKSON.

Making Carriages so as to Prevent them Overturning:

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved subiect, Beniamin Habbakkuk Jackson, gentleman, hath by his humble petiĉon represented vnto Vs, That he hath by his own ꝑper study found out a very needfull invention for the makeing and altering of coaches, charriottȼ, callashes, and other machines of that nature, in such a manner that the persons who sit in them will be in no danger of receiving any damage though the wheeles should be ever so suddenly oversett, because the bodies of them will always in such cases, at the very same, remain in an vpright position, equivalent to an horizontal levell, and they will be likewise on the same of a hill, and in the most rugged and vneven roades; that ıe lives of many have been very much endangered or lost, or by this invention in a great measure be prevented; that the t to perfection and practicable for the common vse, and the or three wheeles, for a single horse, may be fitted with new rill be different from and more convenient than those formerly t the said quarteringȼ, and the coaches, charriottȼ, calashes, y be altered according to this new invenĉon, and will be more them, and lighter for the horses.

hapel.

DATE 13 - July 76

NAME J.C HONEY

No books from open shelves may be reserved

D. 1715 . . . . N° 400.

DUBISON.

ing and Dyeing Calicoes in Grain.

f God, &c. To all to whom these presents shall come, greeting: ɔeloved subiect, Peter Dubison, hath by his petiĉon humbly ath with great paines and expence invented a new peculiar way or staining of callicoes in grain, with colours more bright and washing and weather much better than any heretofore vsed in ɛs shall equal if not exceed in beauty and vse those stained in by many experiments brought and improved his said art to ı, and humbly presumes the same, if duely encouraged, may be the publick, by preventing the importaĉon to and consumpĉon ints; that he shall be able to send his said printed, dyed, or stained callicoes at rates much lower than for which Indian chints can be afforded, and very little exceeding those ordinarily paid for callicoes now manufactured in England, by which meanes he hopes great quantities may in time be exported from Our dominions for sale in foreign countries instead of chints, which will greatly improve Our said revenue, be still more advantageous to the trade of the nation in generall, and to Our subiects in particular employed in the said manufacture.

From Letters Patent—Rolls Chapel.

A.D. 1716 . . . . N° 402.

BERRY.

Curing the Sweepings of Ships (Pepper, Tobacco, and Oil).

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Thomas Berry hath by his peticon humbly represented vnto Vs, That he hath by great paines and industry and at great expense found out and invented a new way and method of cureing the sweepingꝭ of ships; that this method is altogether new, and was never practiced in Our dominions or elsewhere by any person whatsoever except the peticoner, and in regard this will prove of great advantage to Our subiectꝭ, by rendring the said sweepingꝭ of ships vsefull and saleable, which otherwise will be of little or no value; praying, therefore, that Wee would be gratiously pleased to grant him Our Royall Letters Patent for the sole vse of the said invencon for the term of fourteen yeares, and haveing explained his said invention in manner as followeth (vizt): That the comodities cheifly seperated and cured out of the sweepingꝭ of ships are pepper, tobacco, and oyl; for the cureing of peper the peticoner hath invented severall sorts of sives, vnknown to any other person, of different natures, to the number of thirty and vpwardꝭ, some of the holes of which are from four inches wide, and others not larger than the point of a pin. There is only one of these sives vsed in water tubbs, whereof three tubbs are vsed on this occasion, and by a particular mocon invented by the peticoner, the pepper is intirely seperated from the dirt and stones, after which it is dryed on a kiln, afterwardꝭ exposed to the air to take out the fire, and is thereby made fit for vse: That as to the tobacco, the dirt and tobacco are dryed together, and by throwing them vp in a room, the dirt which is heavier than the tobacco is thrown to the other end of the room, and the tobacco which is lighter falls at his feet: That as to the oyl, the peticoner vseth a large copper wherein he heates water, and several tubbs scituate one vnder another, with spouts to run into one another, by which meanes, by the continual vse of warm water in the tubbs, the oyl is intirely refined and seperated, and made fit for vse. Witnesse Our Selfe, at Westminster, the Twentieth Day of February.

From Letters Patent—**Rolls Chapel.**

A.D. 1716 . . . . N° 405.

EDWARDS.

Making Pitch, Tar, and Oil, from Roof-stone.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Talbot Edwardꝭ, Esquire, hath by his petition humbly represented vnto Vs, That in the seventh year of the reign of Our royal predecessors, King William and Queen Mary, a patent was granted to Martin Eele, Thomas Hancocke, and William Portlock, for making pitch, tarr, and oyl, in England, from roch or roofe stone, by breaking, grinding, and boyling the same; and that the said patent has for some yeares been expired, and a new and better way found out to make the abovesaid manufacture (by fluxing with fire only), and brought to perfection by the great labour and expence of the peticoner, and the said pitch appearing by the certificates annext to his peticon to be preferable to the Swedish; and humbly prayed Vs, in consideracon of the great charge he has been at, to grant vnto him, his executors, administrators, and assignes, Our Royal Letters Patentꝭ for the sole making of pitch, tarr, and oyl after this new invencon for the term of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1716 . . . . N° 407.

EVANS.

Endless Chains and Circular Spring for Turning Roasting - Jacks, Clocks, and Water Works.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Robert Evans hath by his petiĉon humbly represented vnto Vs, That he hath with great paines and expence lately invented and brought to perfection two circular movements (performed by two chaines, which he calls his endlesse chaines) of great vse in jack work, by the help of which jacks will go with lesse weight, more certain, and longer than the multiplying jacks, or any other jacks hitherto made; that to these movements he hath added a new circular spring, which is so contrived as to force the jack round, even during the winding vp, by a contrary moĉon, thereby preventing the burning or vnequal roasting of the meat, which constantly happens by the vncertain going of the common jacks: That the said movements will be of the same vse in clock work, and in some sort of water works, as he hath found by severall experiments.

From Letters Patent—**Rolls Chapel.**

A.D. 1717 . . . . N° 414.

SHUTTLEWORTH.

Machine for Draining Coal Pits, Mines, &c.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Edward Shuttleworth, of Leverpoole, in Our county of Lancaster, gent^{l}, hath by his petiĉon humbly represented vnto Vs, That he hath with near twenty yeares study and and with great charge solely devised, invented, and brought to perfection a new machine or engine, such as was never yet found out, for draining water out of coal pits, salt pits, copper and lead mines, which will answer more effectually than any yet extant, being all performed with such a number of wheels, water wheels, bucketted chaines, and pipes above ground, as are agreeable to the quantity of water required to be drawn, and so contrived that the same water which the said engin shall fetch and draw vp by a circulating motion shall work the said machine or engine with the assistance or small power of one horse or wind, and draws vp water proportonable to the number of pipes the pit containes with more ease and lesse danger than any yet found out, and will be set vp at an easy rate, and worked and managed with one man and a small assistance with a great deal of ease, and draw out of the deepest pits sufficient to clear any reasonable work, and not liable to be out of order to cause any great delay or hindrance in the performance, and consequently of excellent vse in any mines whatsoever which have occasion to have their waters drawn off, and will be of publick good to the nation in generall, and an encouragement to all persons concerned in any such works that stand in need of having their water drawn in any parts of Great Britain or Ireland.

From Letters Patent—**Rolls Chapel.**

A.D. 1718 . . . . N° 420.

APLETRE.

Raising Silk by using an Evaporating Stove and Egg Chest; Method of Feeding Silk Worms.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved John Apletre, Esquire, hath by his petiĉon humbly represented vnto Vs, That he hath by his great industry, study, and skill found out a way of raising silk, in this Our kingdom of Great Britain, to as great a perfection as in any part of Europe by a particular invenĉon of his own, which will tend very much to the benefit and advantage of Our subiects, and will employ a great many poor; and the petiĉoner by his affidavit thereunto annext hath sworn that he hath invented a certain machine, called an evaporating stove, whereby to keep in a constant and vniform warmth (during the cold of the severest winters) the eggs of the silk worms, thereby to prevent their being spoiled by the frosts, and that he hath invented a certain engine, called the egg chest, to keep the said eggs in during the winter's cold, which will be an infallible security for the preservation of the said silk worms eggs; and that he hath a certain and infallible method of feeding the said worms with vndoubted successe, let the weather be ever so wett, which said method will supply all defects which have hitherto happened in feeding of silk worms with mulberry leaves that are gathered in wett and rainy weather; and that he hath invented a way of feeding the said silk worms that are produced annually from the sowing of the seed of ripe mulberries, which said method effectually supplies the want of mulberry trees that are of a sufficient growth to yeild leaves for the food of the silk worms; and that by the carrying on of the said intended work of raising or growing of silk in Great Britain great multitudes of the poor of both sexes will in a few yeares be maintained and employed by the petiĉoner and his partners and assignes; and that by the means above specified will be produced as good silk of British growth as any comes from abroad.

From Letters Patent—**Rolls Chapel.**

A.D. 1720 . . . . N° 427.

CUMBERLAND.

Heating Planks of Wood and Making them Pliant, for Bending the same in Ship Building.

GEORGE by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trustee and welbeloved John Cumberland, mariner, hath by his petiĉon humbly represented vnto Vs, That he hath with great study and expense invented a new method for heating and making plank plyant, so as to bend and be wrought to any form required on any of Our ships of Our Royal Navy at less then one third part of the present charge, and in one fourth part of the time, which he hath performed in the presence of Our principal officers and coñissioners of Our navy at different times and places, and hath since by their order erected a machine for the heating of plank in Our yard at Deptford, and hath therein heated and wrought plank from one inch to seven inches thickness on board several of Our ships in Our said yard, to the satisfacĉon of Our officers above menĉoned; praying Vs to grant him Our Royal Letters Patents for the sole vse and advantage of his said invenĉon for heating, bending, and making of plank plyant, of all sorts, to be wrought on any ship, vessell, lighter, boat, or floating craft, and for the heating, drying, seasoning, and bending of all sorts of timber, wood, plank, or board, for the term of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1720 . . . . N° 430.

DESAGULIERS, NIBLET, AND VREEN.

Applying the Steam of Boiling Liquors for Drying Malt, Hops, Gunpowder, &c. Baking, Brewing, Distilling, Making Salt, Sugar, Tar, &c.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved John Theophilus Desaguliers, doctor of laws, Daniel Niblet, coppersmith, and William Vreen, instrument maker, have by their petiĉon humbly represented vnto Vs, That they, by their greate expence, labour, and study, found out a new invention for making the steam and vapour of boyling liquors, vsefull for many purposes, and particularly for drying malt, hops, starch, and other humid substances, and for baking, brewing, distilling, boiling, and making of salt better and with a less quantity of fire, without mixing the fiery particles with the several substances so much as in the ways coñonly vsed, by which invenĉon several works may be effected without danger, such as drying gunpowder, boyling pitch, tarr, oils, varnishes, wax, tallow, sugar, and extracting spirits from turpentine and other inflamable liquors, which, according to the common way, are apt to set houses on fire, and often prove of very bad consequence in great cities.

From Letters Patent—**Rolls Chapel.**

A.D. 1721 . . . . N° 432.

HARRIS, SENEX, AND WILSON.

Making and Printing Globular Sea Charts.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come greeting: Whereas Our trusty and welbeloved John Harris, John Senex, and Henry Wilson have by their petiĉon humbly represented vnto Vs, That after much labour, time, and expence they have invented a new method of proiecting sea charts for the vse and improvement of navigation, which, being agreeable to the globe as truly representing the globular surface of the sea, they humbly apprehend may be properly called a globular chart, and that thereby all navigators may perform their voiages with much more facility, certainty, and security than hitherto has been done by any methodȩ of the plane or Mercator's chart, they having submitted specimens thereof to the examinaĉon of severall able mathematicians, navigators, and astronomers, and particularly to Our trusty and welbeloved Sir George Byng, Sir John Jennings, Sir Charles Wager, Dr. Edmund Halley, Regis Professor of Astronomy, and Captain John Merrey, of the Trinity House, who approved of the same; and the said Doctor Halley and Captain John Merrey had vouchsafed for the promoteing so publick a benefit to certify the excellency of this chart, and to recoñend it to all navigators for its vse at sea in great circle sailing and other improvementȩ, the which certificates or testimonials are ready to be produced.

From Letters Patent—**Rolls Chapel.**

A.D. 1721 . . . . N° 433.

HARDING.

Making Sugar Mills, and Worms for Making Sugar.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved William Harding, citizen and blacksmith of Our city of London, hath by his petiĉon humbly represented vnto Vs, That he had been for many yeares an inhabitant in Our island of Jamaica, and being skilled in making sugar mills and and other engines belonging to the same, by many yeares practice therein, doth perfectly know the inconveniences Our subiects in that and all other Our dominions in America lye vnder and damages they suffer by the imperfecĉon of their sugar mills, water mills, and wormes for making sugar and rum, the same being subiect to so many disorders, and difficult, chargeable, and tedious to repair, being chiefly made with large timber and wooden coggs only, having a case of iron on the timber and an iron gudgeon through them, which often breaks by the imperfecĉon of the rollers, in which case the remedy hath been to make new rollers, nothing but the outside iron case being vsefull, which rollers must be made of a particular sort of timber, and by such experienced artificers as are difficult to be found in many partȩ of Our said island, by reason whereof some times the whole works are stopped many days, while the sugar canes, being ripe, are spoiling: That the petiĉoner, endeavouring to remove not only those inconveniencies but also to supply those sugar works with water which are at present in great want thereof, and releive others which being on low ground are much annoyed therewith, did make many experimentȩ, but for want of proper matteralls and workmen in Jamaica could not perfectly compleat the same, and therefore, at the request and for the encouragement of Our subiectȩ in Jamaica, the petitioner returned to London, where at his great expence, long study, and industry he hath invented, contrived, and made models and specimens at large of such sugar mills, engines, and wormes as will infallibly surmount and remove the aforesaid difficulties and inconveniences,—which models and specimens have not only been approved by gentlemen of Jamaica now in London, but also by gentlemen of the Royal Society who have viewed and examined the validity and excellency thereof,—the rollers and coggs and gudgeons whereof are all iron, cast and wrought in a different manner and form from all those now in vse, and such equal proporĉons and dimensions that if by any accident a gudgeon or any other part of the rollers should be disordered, it may be repaired, without the help of any other workmen than those about the mill, for one eighth part of the charge it vsed to cost, and be set to work againe in four or five houres time, the engine being for supplying the said mills with water, having an iron pinion or small wheel of a peculiar form and manner, with works circular within an iron double or endless rack, toothed all round, so contrived within as to command one sucker or forcer, performing both offices at the same in a single barrel or cilinder, making a purchase of any length required, which, being wrought by the power of the mill or otherwise, will supply all the works with a continual stream of water without intermission, and the wormes being cast and made on a core of mettle, so particularly contrived as to be taken out after the worms or pipes are cast thereon with much more ease and conveniency than any ever before made vse of by any artificer whatsoever, by which meanes the wormes and water pipes will be compleatly finished without sorder, or being bent after casting as those now in vse generally are, and being kept cool by a constant supply of water, will prevent yearly the loss or spoiling many thousand gallons of rum, and by removeing the waters from those places where it super aboundȩ to places where it is extreamely wanted will greatly encrease the value of many hundred thousand acres of land in all those Our dominions in America; and that for as much therefore as the petitioner has been applied to and encouraged, and has

been at trouble and expence in finding out and makeing models and specimens, trying and bringing to perfeccon the said invencon, and that the same in all probability will be of great advantage and comodity to Our subiects, he hath humbly prayed Vs to grant him Our Letters Patentꝭ for the sole vse, making, and vending of his said invencon in that part of Our kingdome of Great Britain called England, and in all Our dominions in America, for the term of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1721 . . . . N° 434.

DE LA CHAUMETTE.

Cannons; Swords; Powder Flasks; Curing Smoky Chimneys; Pocket Knife; Buckles, &c., &c.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Isaac de la Chaumette, inginier, hath by his peticon humbly represented vnto Vs, That he has by much study, industry, and expence brought to perfeccon the making of divers engines, machines, and instruments of severall kindꝭ, which were never before invented, and will be of very great vse to the publick, which are as follow, vizt: A cañon or piece of ordnance, which, being charged by the breech through the barrel, is cooled by charging it, and cleaned by firing it; it carries twice as farr as those comonly in vse, and requires but halfe the quantity of powder, and halfe the length of an ordinary cañon, and does not recoyl; it is very vsefull, especially at sea, where the gunners will not be exposed as they now are in loading the guns, and it may be fired ten times as often as the cannon now vsed, which will render a ship or a place vnapproachable: fusils and pistols of the like make, and having the same advantage: swordꝭ which serve for byonetts, by meanes of a ring at the pummell, and a screw at the hilt, more solid than the ordinary byonett: powder flasks that make the charge always iust by a conservatory without any spring: a machine to cure chimneys that smoak in windy weather, by a plate of tinn or iron at the top of the chimney, half in and half out, hung vpon two pivots, and which likewise serve to prevent the smell of necessary houses: two snuff boxes, one with a slider, and the other with a sweep, out of which snuff may be taken without pulling it out of the pockett, and without spilling: a pen knife that makes a pen at once: a pocket knife so contrived that the two cheeks of the handle close when the blade is raised, by meanes of an opposite screw, instead of the ordinary rivet by which the blade is vsually fixt into the handle: buckles without anchors, which are more convenient and cost less than ordinary, being made with a folding tonge: a machine with moving circles, ten faces on each, whereon are described the nine figures and a cypher, which by turning round make all sort of combinacons in numbers, for the drawing lotteries, and several other matters of public vse grounded vpon the same principle: two case pistols, of which a carbine may be made and charged without a rammer, by a thimble like a funnel, which fires the bullet without ramming: a turning matress fit for armies and hospitalls, that lasts four times longer than the ordinary ones, and on which a man may shift his place at pleasure, and with great ease: coaches and chaises that can neither overturn nor iolt: a method to prevent shipwrack beyond all that have been hitherto vsed: a bomb or granado that will always burst at the proper distance, and does not discover its way in the air as those now vsed do by the burning of their fuzees. brest plates, full proof, lighter by halfe than the ordinary ones, with which one may intrench in case of need: candlesticks and rings which may be made wider or straiter as there shall be occasion: sharp pointed scissars, so contrived that they may be carried in the

A.D. 1

Making Sugar

GEORGE, by the Grace o
greeting: Whereas Our trusty a
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vnder and damages they suff
wormes for making sugar and
chargeable, and tedious to rep
only, having a case of iron on
breaks by the imperfecõn of
rollers, nothing but the outs
particular sort of timber, a
many partꝭ of Our said isl
many days, while the sugar
to remove not only those in
which are at present in gr
are much annoyed therewi
and workmen in Jamaica
and for the encouragem
where at his great expen
models and specimens at
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specimens have not only
gentlemen of the Royal
thereof,—the rollers a
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that if by any accident
may be repaired, wit
eighth part of the c
time, the engine be
small wheel of a p
endless rack, toothe
performing both off
length required, wh
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and made on a vare
pipes are cast thr
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nny, or thereabout℔, which amount℔ to twenty five pound℔ per cent., reabout℔; that by reason of such drawback great quantities of beaver t beyond sea to foreign parts, which enables the foreigners to sell the ound℔ p cent. cheaper than it can be sold in England, which is a manifest ers trade, and also a detriment to Our customes, for that the wooll when r skin here pays Vs five pound℔ per cent. duty on the export, which is s, as to all the skins exported vncut, besides the twenty five pound℔ per the vncut skins as aforesaid; and there is also a duty on the pelt℔ which to leather, and pay Vs a duty of thirty pound℔ p cent., ad valorem: that ited engine will employ the same number of people in preparing and as now, and its great dispatch and cheap working prevent℔ the great er, and instead thereof occasion the greater export of beaver, coney, and nand for the same in foreign parts being very great, whereby there will be nd℔ p cent. advantage to Vs in the customes, but also will be of very great the said trade, and for the benefit of the nation.

tent—**Rolls Chapel.**

A.D. 1721 . . . . N° 438.

PIPER AND TINDALE.

of Chalk and Sea Water for Increasing the Growth of Grain, Pulse, and Grass.

, by the Grace of God, &c. To all to whom these presents shall come, greet- Our trusty and welbeloved John Piper and Matthew Tindale, junior, gentle- Their petition humbly represented vnto Vs, That they have been at great labour finding out and inventing a certain compound never before made vse of, con- ared chalk and sea water, which abundently increaseth all manner of grain, ss beyond whatever hath been known, and what may be of great service to in generall; the said petitioners, having tryed the experiment, can prove that ey corn setting it hath produced eighty to one hundred and thirty large shoots, great eara of corne, the same still growing, and by the said petiçoners ready to

s Patent—**Rolls Chapel.**

A.D. 1721 . . . . N° 439.

NEWSHAM.

Engine for Extinguishing Fires.

E, by the Grace of God, &c. To all to whom these present℔ shall come, greet- reas Our trusty and welbeloved Richard Newsham, of Our city of London, pearl ker, hath by his petition humbly represented vnto Vs, That after much labour, expence he has invented a new water engine for the quenching and extinguishing h by its contrivance in working with more winches or cranks on the outside than engine heretofore made (none having more than two cranks to work with), a new

contrived winch or crank in imitacon of a crane, called a crane crank, acts with a double mocon, and hath a new invented clack with four half wheels, also a new fashoned worm, which works without racks or ladders, so fixed that one fforcer begins before the other hath left forceing, and causes a continued stream without intermission, and with such force that it throws out or emptys one hundred and ten gallons of water in one minutes time, or little more, and at a greater distance than any other water engine can ; and as it excells all other water engines in the performance, so it likewise differs in the invencon and contrivance, and the peticoner conceives it may be properly called a perpetual engine for quenching and extinguishing of fires ; that he hath playd his said engine before severall great persons, and also before the directors of the Hand and Hand Insurance Office, who were extreamely well satisfied with the performance thereof; and haveing humbly prayed Vs to grant him Our Royal Letters Patentꝑ for the term of fourteen yeares, according to the Statute in such case made and provided for securing his property in the said engine, as well as for his greater encouragement, and enabling him the better to carry on and promote the great vsefullness thereof in such ample and beneficial manner as to Vs should seem meet.

From Letters Patent—**Rolls Chapel.**

A.D 1722 . . . . N° 440.

MILLER.

Burning Bricks, Tiles, and Lime.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting : Whereas Thomas Miller, of Fulham, in Our county of Middlesex, brickmaker, hath by his petition humbly represented vnto Vs, That the bricks now generally made and vsed in England and Ireland, especially about London, are extreamly bad, which is cheifly owing to the vnskilfull manner of burning, and that after great study and application to discover some effectuall way of burning, hath found out an invention never before known, by wich he can burn them all hard, and by consequence (there being little or no wast), should be able, not only to bring about the practice of vsing vniversally good bricks instead of bad, but also by affording them full as cheap or probably cheaper than the bad ones are now sold for, which would be also of great vse in burning of tiles and lime which invention he has described to be performed in manner following (that is to say), imprimis : to burn those in the bottom of the clamp as they ought to be, a grate or floor of iron, bricks, or other material is to run the whole length of the holes where the fire is vsually laid, in such manner that mor or less fire may be applyed, as occasion requires, to dry the bricks gently, to such a degree as shall rightly prepare them to receive the strong fire at last; secondly, the method for right burning the bricks on the outside is this : a strong wall is to be built quite round the clamp only, with small overtures to convey in such a quantity of air as shall feed a wast fire between the wall and the clamp, placed vpon several stages; thirdly, for securing the bricks which lye on the top of the clamp from the wet, that they may be as well and thoroughly burnt as the rest, a covering is to be made of pan tile or other materiall never vsed in clamps before ; and the method above described or mentioned, being vsed in burning of bricks, it will cause such a proper heat as that tiles or lime may be burnt on the top of the clamp at the same time.

From Letters Patent—**Rolls Chapel.**

A.D. 1722 . . . . N° 441.

JACKSON.

Machine for Preserving Lives in case of Shipwreck, and in case of the Cramp in Swimming for Pleasure.

GEORGE, by the Grace of God, &c. To all to whom these presentꝭ shall come, greeting: Whereas Our trusty and welbeloved Beniamin Habakkuk Jackson, gentleman, hath by his petition humbly represented vnto Vs, That he has by his own proper study and at great expence found out, contrived, and brought to perfection for public vse a new invencon for swimming, to preserve peoples lives in case of shipwreck at sea, the over setting and sittinking of boats, and in case of the cramp and other accidents in swimming for pleasure, being a portable machine of small bulk and weight, beautifull to the eye, convenient to the body, and very easily put on in a moment without the help of another, not lyable to hurt by accidentꝭ, but very durable, and being fixed on the body infalibly preserves it from drowning, by keeping the head and shoulders a sufficient height above water, without any possibility of sucking vnder it, and gives an agility of swimming much faster and longer than any other way, all which has been found to full satisfaction by many personal tryals of sundry gentlemen and others in the river of Thames, in the presence of the nobility and gentry and multitudes of other spectators, with vniversal approbacons, being effectuall to answer the endꝭ proposed, whereby it is sufficienly evident that if the many British men of war and merchant ships that have formerly been lost had been furnished with these swimmers, according to their full complements of men on boart, the lives of all those that so perished might have been saved; and whereas by the vse of them for the future by Our subiects the like misfortunes might be intirely prevented; the peticoner hath humbly prayed Vs to grant him Our Royal Letters Patentꝭ for the sole priviledge and vse of the said new invencon for swiming, with whatsoever belonged or appertained thereunto, and in whatsoever variety of workmanship or materials the said machines may be composed in every part and branch of the same, or by whatsoever names they may be called, for the terme of fourteen years, according to the statute in that behalfe.

From Letters Patent—**Rolls Chapel.**

A.D. 1722 . . . . N° 445.

BADDELEY.

Making of Pig Iron Streaks for Binding Cart and Waggon Wheels, also Box Smoothing Irons.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Richard Baddeley, of Birmingham, in Our county of Warwick, ironmonger, hath by his petition humbly represented vnto Vs, That he hath with much much pains, labour, and expence invented and brought to perfeccon an art for making streaks for binding cart and waggon wheels and box smoothing irons (never yet practiced in this Our kingdom), which will be more durable and do three times the the service of those made of barr iron, and can be afforded much cheaper, and therefore will be of great vse and benefit to all such Our subiectꝭ as may have occasion to make vse of the same; that as by meanes of the said invention Our subiectꝭ will be more substantially and

at a much easier price supplied than by any other iron hitherto provided for the like service, so the publick roads will be more effectually preserved, and the late Act of Parliament for making such streaks three inches wide in the ring more punctually observed, whereby the carriage of goodꝭ may also be performed at easier rates, to the great ease and relief of Our subiects in general and to the publick good; that box smoothing irons being made of the aforesaid metal will be of so compact a body as to retain the heat much longer than those made of barr iron, and thereby become more vseful and beneficial.

From Letters Patent—**Rolls Chapel.**

A.D. 1722 . . . . N° 447.

RIPLEY AND HOLT.

Compound Liquid Metal for Making Artificial Stone and Marble.

GEORGE, by the Grace of God, &c. To all to whom these presentꝭ shall come, greeting: Whereas Our trusty and welbeloved Thomas Ripley, Esquire, and Richard Holt, gent., have by their peticon humbly represented unto Vs, That they have been at much labour and expence for the finding out and inventing a certain compound liquid metall never before known and vsed by the antients or moderns, by which artificial stone and marble is made by casting or running the metall into moulds of any form or figure, great or small, as statues, columns, capitalls, also for house work and garden ornaments, and all other cutt or sculpture work that might be done in naturall stone and marble, and which, being petrified or vetrified and finished by strong fire, becomes more durable and harder than stone and marble, insomuch that neither wet or dry, neither frost or snow, heat or cold in the extremity, can do damage to it; which artificial stone and marble will be of very great vse and public benefit in all Our dominions, and also great quantities thereof will be exported by reason of its cheapness as well as goodness.

From Letters Patent—**Rolls Chapel.**

A.D. 1722 . . . . N° 448.

HOLT AND LONDON.

Mixture for Making White Ware.

GEORGE, by the Grace of God, &c. To all to whom these presentꝭ shall come, greeting: Whereas Our trusty and welbeloved Richard Holt and Samuel London, gentlemen, have by their peticon humbly represented unto Vs, That they had, by many years labour and experience and at great expence and charges, found out and invented a certain new composicon or mixture (without any sort of clay) for making of white ware, which is formed and moulded in a method hitherto not known or practised, and far surpasses the finest of Delf ware, or any other sort made in any other sort made in any part of Europe; and also by their new method of impression make the fabrick of earthen ware of a more equisite shape than the present method of turning could ever perform or arrive to, by which meanes Our subiects will be able to excell all Europe, and not only employ a great many of Our own poor to the great benefit of trade and the manufactures of Our kingdom, but also prevent the clandestine running of Delf ware, &c from foreign parts into Great Britain.

From Letters Patent—**Rolls Chapel.**

A.D. 1722 . . . . N° 451.

DUNNING.

Poiser for Preventing Coaches Overturning.

GEORGE, by the Grace of God, &c. To all to whom these presentȼ shall come, greeting: Whereas Our trusty and welbeloved Richard Dunning, of Samford Courtney, in the county of Devon, gentleman, hath by his petition humbly represented vnto Vs, That he hath by much labour, time, and expence invented and brought to perfecc̄on a new machine, called a poyser, which, being fixed to any coach, chariot, or chaise, will not only prevent their being overturned when most in danger, either by the badness and vneveness of the road, the ignorance of the driver, or vnruly horses, but also when any wheel should happen to break or slipp of the axle tree of any coach, chariot, or chaise (having often experienced the said machine called a poyser), it will be in a great measure a meanes of preventing the wheels breaking; that the new invented machine, called a poyser, would not be above twenty pound weight for the largest coach, and about twelve pound weight for a light charriot or chaise, and after the first fixing on might be shifted from one coach to another in three minutes time, and is rather an ornament than a disfigure to any coach, chariot, or chaise on which it is fixed; it also saves the trouble of dragging the wheels down steep hills (as caches, &c generall do), and is a means of a coach, &c going more miles in a day than they now do without it; it would be equally serviceable to waggons, wains, cars, and most other wheele carriages; it is humbly presumed that this new invented machine, called a poyser, would be of great vse to Vs and the publick (as often as occasion required) in sending and conveying cannon and warrlike stores cross the country, through bad roadȼ, with more expedition and safety, and likewise to the nobility, gentry, and others who chuse to hunt in chariotȼ or chaises, which they might do in very vneven ground without the least danger. Witness Ourselfe, at Westminster, the Twenty third Day of August.

From Letters Patent—**Rolls Chapel.**

A.D. 1723 . . . . N° 453.

TAYLOR.

Engine for Stamping and Dressing Thread.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Samuel Taylor, of Moston, in the parish of Manchester, in Our county of Lancaster, yeoman, hath by his petition humbly represented vnto Vs, That he has by long study, applicac̄on, and great expence found out and invented a new engine for the stamping and dressing of thread, by which engine one person alone, by turning the main wheele with the hand, causeth the engine of it self to stamp, spread, stretch, turne, pull over, and finish the thread, not only in a much better manner than the best instruted hands can do any other way, but also with much more expedition and safety to the worker, whereby much cost and labour is spared, and the thread it selfe made both more merchantable and fit for vse, and at a much easier expence than by any other method heretofore vsed, to the great benefit of the publick.

From Letters Patent—**Rolls Chapel.**

A.D. 1723 . . . . . N° 455.

SHELDON.

Machine for Packing Hops.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Richard Sheldon, of Thurnham, in Our county of Kent, esquire, hath by his petiçon humbly represented vnto Vs, That he hath with great study, labour, and expence found out and invented and brought to perfeçon a method for the better preserving, securing, and bagging of hops, and promoting the trade and coñerce of the same, by a new invented machine and engine by which four hundred weight of hops is reduced into a cube of two foot square, or a round in equal proporçon, which machines and engines are composed of screws, nuts, and windlaces, tooth wheels, nuts, and pinions, &c, which said machines and engins will be of very great advantage to the trade and coñerce of the hop manufactory in general both by sea and land, for by the closeness of this method of packing the hops it makes them impetrable by air, damps, or otherwise, for although the spirit of the hop is of a spicey and volatile nature, yet by this method they may be kept many years without any sensible decay or alteration either in weight or goodness, aud spend more freely in the copper, the body of the hop being meliorated by this way of packing; that the bulk and weight of the hops by this new way of packing is equal to most bale goodȩ, and exceeding many, so that a ship or any other vessell, of any burthen, may be fully freighted without the bags being exposed above deck to the weather, and makes them with ease and safety to to be transported to any part of Our dominions or elsewhere, they being packed in such form that they will not take vp the fourth part of the room or space of the method now vsed; that this method of packing is in such a form that it is very coñodious for horse loading in the room of wheel carriage, and which will contribute much to the preservaçon of the roads, and conveniency of planters that live remote from market, that coñodity being generally brought there in the winter season; and will be of great advantage to the country traders, brewers, and consumers of hops, and very advantagious to the publick in generall.

From Letters Patent—**Rolls Chapel.**

A.D. 1723 . . . . N° 456.

MILLS.

Heating Wool Combs and Plates for Pressing Cloth.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Isaac Mills, of Belluton, als Belton, in the parish of Staunton Drew, in the county of Somerset, hath by his petiçon humbly represented vnto Vs, That he hath been bred vp in and followed the trade of wooll kembing and pressing for twenty five years last past. The vsual way or method for kembing of wooll is by a fire made in a clay pot, the fire, being open to the kembs, does often neal the kembs and burn the wooll. For the pressing, the planks or iron plates are heat by a fire open to them, which often burns the planks, and heats the iron plates so vnequally that it frequently burns the goodȩ, to the great loss of the tradesman and discredit of the woollen manufacture.

That he hath with great labour, pains, and expences invented two instruments of iron, to be vsed in the said trade of wooll kembing and pressing, which are cast in such a forme, and contrived in such a manner, that a fire being made in the body of the instrument of iron for kembing, the kembs receive the heat from the same in such an equal proporc̃on as neither to neal the kembs or burn the wooll, and that for the pressing the planks or plates being placed in the body of the other iron instrument, and a fire being made to encompass or surround the same, will heat the planks or plates in so true a degree as wholly to prevent the burning of the goods, and the great losses frequently sustained by the traders in the woollen manufacture thereby, which he doubts not will prove of publick vse and benefit to this Our kingdom, by the great consumption of iron the said invenc̃on will occasion, and to all persons concerned in the woollen manufacture.

From Letters Patent—**Rolls Chapel.**

A.D. 1723 . · . . N° 458.

GODFREY.

Extinguishing Fires in Houses and Ships by Means of Casks containing a Charge of Gunpowder, Water, and a Chemical Preparation.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Ambrose Godfrey, of the parish of Saint Paul, Covent Garden, chymist, hath by his petition humbly represented vnto Vs, That for the good of this kingdon and the preservation of Our subiects from the great calamities and losses which do frequently happen by fires, he hath lately been at great trouble and charges in procureing a discovery from Germany of a new invention for extinguishing fires by explosion and suffocation, which was found out and practised there, and was afterwards also practised in several other parts of Europe, but was vnknown in England, and hath given a great reward to an engineer who hath lately come over from Germany aforesaid, from whom the petic̃oner hath obtained a full discovery of the said invention in writing, with a description of the vessells and materials that were there made vse of in order to put the same in practice in this kingdom; that the petitioner hath since greatly improved the said invention by the addition of a certain mixture or chymical preparation found out and prepared by the petic̃oner, which is a great enemy to fire, and can extinguish fires even without water; that the materials of the said invention do consist of casks and oth vessells of severall formes and sizes, some of which are filled with water only, others with water and the said chymical preparation together, and others with the said chymical preparation mixt with other dry matters without any water; and in each of the said vessells is a charge of gun powder in the contained in a tin or box, which has a double neck by which it is fastned to each end of the vessell, and through one of the said necks there is fixt a fuze of wild fire, by which the said gunpowder is to be fired and blown vp; and the said vessells so filled and prepared as aforesaid are (vpon occasion of any fire) to be made vse of by firing the said fuze, and then flinging the said vessell into the place where the fire is broke out, which vpon the explosion of the gun powder blasts out all the flame, and the water or the other ingredients which were in the vessell are forceably driven by the gun powder against the parts that were on fire, and do damp and suffocate same so effectually that any man may safely enter the place, and with proper implements may totally extinguish the remaining fire; that the petic̃oner is the first and onely person that introduced the said invention into England, and in order to put the same into practice hath lately been at further great charges in prepareing and fitting vp several of the vessells aforesaid, and in building two wooden houses

and providing several engines and contrivances to convey the said vessells into vpper roomes; and the petitioner hath shewed two several experiments of the said invention, of the said two houses which were set on fire for that purpose in the presence of several noblemen of this kingdom, and many members of the Royal Society, and other persons of rank and distinction, who declared themselves to be entirely satisfied of the great vse and benefit of this invention to the publick in preventing the calamities which frequently happen in houses and ships, &c.

From Letters Patent—**Rolls Chapel.**

A.D. 1724 . . . . N° 466.

MASON AND CHAMFLOWER.

Syphon or Engine for Clearing Ships of Water, Draining Mines and Marshes, and for Extinguishing Fires.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved William Mason and Thomas Chamflower have by their petition humbly represented vnto Vs, That they have by their great pains, long and industrious study, and much expence found out, invented, and brought to perfection a new machine called a siphon or an attracting engine, that works without friction of solids (so long sought after by the ingenious, but not happily discovered till the said invention), partly by attraction and partly by force, and is composed of two tubes, one within the other, lifting vp the water through its own cavity by the aid of some releiving valves, placed at proper distances one above the other, and is moved by a peculiar power containing two segmentȩ of a circular wheel, and two short chains reverted on each segment for lifting vp and forcing downe the inward tubes, and in regard it would be liable to few or none of those accidents to which all engines hitherto invented are subiect by reason of its being worked without friction, it would be of vnspeakable value for preserving of ships of warr in engementȩ and merchant men diversity of distress at sea, whereby vast numbers of vsefull lives may be saved, and it may also eminently serviceable in draining of mines, moores, and marishes, as also for raising of water for extinguishing dangerous fires with greater celerity, and in double or treble the quantity than any other pumps or machines whatever are able to effect in the same space of time, with the same given power, and to the same given height, it being capable to discharge near one thousand gallons of water twenty foot high, with the help of few men, in the space of a minute.

From Letters Patent—**Rolls Chapel.**

A.D. 1724 . . . . N° 467.

SCOBELL.

Waterwheel for Raising Water and Working Mills, &c.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and well beloved Francis Scobell, Esquire hath by his petition humbly represented vnto Vs, That after long study and great expence he hath invented and brought to perfecc̃on, a new method of raising water in greater quantities from the same depth with a less stream of water as well as with a less fall than hath hitherto been known to have been put in practice but by the petic̃oner, which method is performed by an engine wrought

by a slope or declining wheel, wherein the whole water that drives it is so confined on the descending part of the wheel as to give a greater weight and consequently a greater power to this wheel than to any other now in vse; that as the larger the wheele the greater the power, the weight being further distant from the center the said wheele might be made of three times the diameter of any other wheel which could be wrought with the same fall of water; which invencon would be of great vse and benefit to the publick by reason of the many vsefull purposes for which water might be raised, and particularly for that of draining of mines, wherein the petitioner has had long experience, and for which the said engine was originally and principally contrived; and as he humbly conceived would best answer that end in all places, but more especially where a small stream or a small fall of water only could be had; and the said slope or declining wheele might applyed to the working mills, and many other purposes besides that of raising water.

From Letters Patent—**Rolls Chapel.**

A.D. 1724 . . . . N° 468.

DUNNING.

Engine for Raising or Forcing Water; Rowing Engine for Forcing Ships against Winds and Tides, &c.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Richard Dunning, of Sampford Courteney, in Our county of Devon, Esquire, hath by his petition humbly represented vnto Vs, That after much labour, time, and expence he hath invented, found out, and brought to perfection two engines or machines, viz^{t}, one a water engine for raising or forcing water vp into any town or gentleman's seat, which may properly be called a ffloating water engine, to be placed or fitted von a barge in the river of Thames, or any other large river, without hindring the navigation of the river, and is moveable at pleasure, and which will be wrought by the force of the coming in or going out of the tide, or with the current of any other river where no tide is, and will force the water from the middle of the stream about one foot vnder the surface of the water, by which means the water will be clearer and finer than at the sides or near the bottom, which the peticoner humbly presumes will be of great advantage and service to the publick: The other a rowing engine, which when fixed on board of any ship will force ships of any burthen whatsoever against windes and tides (if not excessive violent) out of or into any bays or harbours, and also save ships from being stranded on a leeward shore, or ship wrecked in stormes at sea when by stress of weather ships have lost their masts, sailes, or rudders, and will also force a ship sixty miles a day in a perfect calm at sea, by which meanes many ships and mens lives may be preserved; that the said engine will likewise enable a ship of smaller force to beat and take a ship of the greatest force by avoiding the enemies side gunns, and at the same time raking the enemy fore and aft with her gunns at pleasure, which he hopes will be not only of great and singular service and benefit to our ships of force in warr time, &c. but likewise to all Our trading subiect^{s} in the preservacon of their ships and lives, and that the said machines or engins are intirely new found out, contrived, and invented by the peticoner, and and no other person or persons to his knowledge or beleif.

From Letters Patent—**Rolls Chapel.**

A.D. 1724 . . . . N° 473.

WHITE.

Engine for Raising and Discharging Water in and out of Ships, and for Extinguishing Fires therein.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Henry White, of Our city of Bristol, gentleman, hath by his petiĉon humbly represented vnto Vs, That he having often observed the method of dischargin water out of shipss by coñon pumps to be perſormed with the vtmost labour, has with continued applicaĉon, paines, and expences invented and brought to perfecĉon an engine which will take vp no more room in a spip nor power to work it than a common pump, and will with much less labour and pains discharge eighty gallons in a minute, which is at least double the quantity vsually discharged by coñon pumps, and in like proporĉon to the power made vse of with larger engines (if such are required); and as a further conveniency it is so ordered, that by the addiĉon of a leather hose and pipe instantly to be fixed to the said engine the water might not only be raised, but discharged on any part of the ship's deck or rigging, incase a fire should happen in the same, which said engine would also be of iñediate vse and benefit on board any ship in other cases of extremity and distress, and of great service for many other vsefull purposes; that the said engine is so contrived that by the application of any power, as the strength of man or beast, wind or fall of water, vacuums are made by a crank, working boxes, or forcers near the top of the said engine, by meanes whereof the water constantly ascendȩ through a tube or set of tubes from any depth proposed, even five hundred feet or more, by the pressure of the atmosphere only during such application.

From Letters Patent—**Rolls Chapel.**

A.D. 1725 . . . . N° 476.

NUTTALL.

Engine for Supplying Towns with Water, and for Draining Mines, Lands, and Marshes.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Thomas Nuttall and Joseph Skyim have by their petiĉon most humbly presented vnto Vs, That they for many yeares (after much labour, time, paines, and expence) have found out and invented a new machine or water engine never as yet known or vsed in this Our kingdom, whereby the severall cities, corporations, and towns in this Our kingdom may be supplied with water far much easier than any other machine or engine hitherto known or practiced, and as it excells all other water engines in this particular, so likewise it does also in draining of tinn, lead, and coale mines in this Our kingdom, and may drain any of the said mines at the fifth part of the charge and expence that any other engine can do, whereby our subiectȩ will reap several benefits; that this new invented machine can be set vp for any of the purposes aforesaid at an expence not exceeding fifty poundȩ at the most, and capable of draining the deepest mines in Our kingdom, and maintained at a small charge not exceeding the prime cost annually, and by which two hundred tunns of water may be raised to a proporĉonable height in every hour; that the proprietors of the severall mines of tin, lead,

and coles in Our kingdom of Great Britain will hereby free themselves from the vast expences of draining the water from their respective mines by expensive engines drawn by horses, and fire engines which are very expensive at the first cost, and the maintenance of them after is very great, for the fire engines must be always attended and kept in repair, because they frequently break out by violence of the fire which very often breakes out and destroys the whole; that the mines in Our kingdom which are now vseless will be by this engine rendred vsefull, and it will also be of singular vse and service for draining of overflowed landꝯ and marshes, which will be a great advantage to those whose misfortune it is to have most part of their estates vnder water, and it will be likewise of great vse on shipboard incase of leakes, and the charges of such an engine for that purpose will be very small.

From Letters Patent—**Rolls Chapel.**

A.D. 1725 . . . . N° 478.

PAION.

Mixture to be applied to the Bottoms of Vessels for keeping them Free from Worms and Preserving them from Decay.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Daniel Paion, of Blackwall, in Our county of Middlesex, gentleman, hath by his petiĉon humbly represented vnto Vs, That he hath with great expence, care, and pains found out a certain mixture or preparaĉon which being applied and well paied to the bottom of any vessell or elsewhere will so far penetrate into the plank as to become one substance with the wood to which it is laid on and paied as aforesaid, keeping the worms from eating through the plank, preserving the same from decay, and entirely freeing the bottom from other accidentꝯ and vermine detrimental to shipping; that the said preparation hath been proved on the ship Magdalene, of S^t^ Malo, bound to Martineco and S^t^ Domingo, in the West Indies, which ship came home to S^t^ Malo aforesaid entirely free from worm holes and vntouched, and not the worse for the voyage, although the said coastꝯ are the worst in all those parts, and so much troubled with wormes that in twenty four houres those vermine will so farr penetrate into the bottom of a vessell as to make it entirely vseless and vnserviceable if not sheathed with lead (the vsual custome to preserve the same), the charge of which is fourty times more than the petiĉoners preparaĉon and not so dureable; that the said preparaĉon will, when laid on as it ought to be, not only hinder the shipping from taking fire, but is also so farr a destroyer thereof as to extinguish the heat of an iron bar before it can penetrate or make any impression on the wood whereon mixture is laid vntill the same is entirely worne off, and so hard and dureable that it standꝯ proofe vnder line, and is as a case of steel to a ship against sandꝯ, preserving the same from rubbing or other accidents happening to ships by falling vpon sandꝯ.

From Letters Patent—**Rolls Chapel.**

A.D. 1725 . . . . N° 479.

NEWSHAM.

Engine for Extinguishing Fires and Raising Water to any Height.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Richard Newsham, of Our city of London, hath by his petiĉon humbly represented vnto Vs, That in the year one thousand seven hundred twenty and one he did obtain Our most Gratious Letters Patent for the sole making and vending a water engine for quenching and extinguishing fires, which was therein mentioned, to be

wrought with severall winches or cranks and four halfe wheels, so fixed that one forcer began to force the other forcer had left its forceing, and thereby caused a continual stream: That the petitioner after much experience has made and invented very considerable improvemenţ to the said water engine for quenching and extinguishing fires and other vses, which he now makes long and narrow, and thereby gains much more power and force by working with a number of handţ along the sides of the engine, and others with their feet vpon the engine, or with handţ or feet seperately, by which meanes the longest size will force out one hundred and seventy gallons of water each minute, at about forty yards distance, in a constant stream, the forcers being guided by the arch of a double wheel and chains, or racks and teeth, which cause a perpendicular stroke, and is so contrived to go through any narrow passage or common door case without alteracõn, having nothing to take off or put on, but is in a constant readiness to work; which said invencõns and improvements appearing to be entirely new and every way adapted to the purposes designed, and is of greater vse and service to the publick incase of fires than any thing that has hitherto appeared, insomuch that several of Our subiectţ have of late and are daily practiceing to make water engines in imitacõn of the petiçoner's water engine for quenching and extinguishing fires as well as for other vses, and his new invention and improvements thereon, and in opposition and contempt of Our said Letters Patent, which do not fully comprehend and protect the said new invention and improvementţ, which he humbly conceives to be piracy and an invasion of his property to the same: That the petiçoner has also through much labour, time, and expence invented three severall new methodţ of different kinds for raising water to any height required; the first, out of deep wells or mines, with or without suction; the second, from rivers or pondţ, by a given power moving circularly vpon the forcers; and the third, from the surface or otherwise by the wind: That he hath also invented and made a new and vsefull bush or box for the spindle neck of a corn mill to run in, which totally preventţ many ill consequences that frequently happen in the method now unversally in practice, and will work with much less water, wind, or any other given given power that has hitherto been found out: That the petiçoner conceiving the said inventions, all of them, to be entirely new, hath therefore humbly prayed Vs to grant him Our Royal Letters Patent for the term of fourteen years, according to the statute in such case made and provided, for securing his property in the said water engine, and for quenching and extinguishing fires and other vses, and his new invention and improvementţ thereon, and in the said three inventions for raising water to any height required, as also in the said bush or box for corn mills, and to and in all further improvements he shall make to them or any of them or any part thereof, as well for his great encouragement, and enabling him to carry on and promote the great vsefulness thereof.

From Letters Patent—**Rolls Chapel.**

A.D. 1725 . . . . N° 480.

EDWARDS.

Making Water Pipes of Earth or Clay; Cement for Joining the Same.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved William Edwardţ, gentleman, hath by his petition humbly represented unto Vs, That he hath after many yeares, much labour, pains, and great expence found out and invented a new method never yet known or practised for making of pipes with clay or earth for the conveying of water vnder ground from place to place; that the said method is performed in manner following, vizt: That the petitioner having provided a turned piece or plug of wood, according to the length of the pipe designated, and having fitted it on a potters wheel with a ball of clay prepared for the purpose, and disposed to the

bottom of the plug which standꝑ vpright in the center of the potters wheel, the petiẽoner's servant by his directions (after having made several experimentꝑ of the said invention) turned vp with his handꝑ, on an engine contrived for the purpose, great quantities of pipes, with such expedition that one wheel could turne off fifteen or twenty dozen of pipes in a day, that the clay being prepared with a great deal of art, and ground in a mill by an horse, the petiẽoner cann runn vp these pipes to the substance of two inches, and to eight or ten or more inches diameter, if required, in the bore ; after they are dried to a fitting temper they are put vpon a turners lath, and are shaped with proper tools to what form and fashion needfull, as spicket or other waies, so to fit the boared end of the other pipe with a proper instrument that they fit with all exactness, so as to admit of little or no wast of water ; but to make them more effectually do it the petitioner hath made and invented a cold putty, that cements and joynes them them with that firmness that the cement becomes as hard as any the burnt pipes, and as lasting in or out of water ; that in the laying these pipes in the earth (or out of it) the petitioner can make them to rise or fall, and give them any the shortest turnings ; that besides the naturall strength of the clay, he can hoop them with iron hoops or ring hoops made of the same clay as the pipes, which will add double strength to them, and the petiẽoner beleives will throw vp water to any height in reason ; that the petiẽoner hath made a pump of great depth of these pipes, which draws its full quantity of water to the size of the bore, and works with all ease and exactness ; that his said invention is founded vpon great experience in the proper preparing and working vp the clay for this purpose, the same being wrought by the strength of mens handꝑ, and turned vpon an engine contrived so admirably that in the working of the clay the pipes shall be so firm and strong that it becomes (after the proper drying) as solid as any wood ; and thus contrived, these pipes are turned with that exactness (by an engine) that the one end is tapered so as to fit the bore end of the other ; that nothing can possibly be more exact, and after the ioyning (the pipes are then so strong that no strength can loose or part them, and will abide all weather and water without perishing, they will be of singular vse in carrying of water from the tops of houses and buildings ; that by this new invenẽon it is apprehended that that it will be of generall vse and advantage to Our kingdom, because that every county may have such pipes made at their respective homes, and which will be of great vse in employing the poor of this Our kingdom through all the inland counties thereof.

From Letters Patent—**Rolls Chapel.**

A.D. 1726 . . . . N° 487.

BENSON.

Apparatus for Crushing and Grinding Flint in a Moist State for the Manufacture of White Pots.

GEORGE, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Thomas Benson, of Newcastle-under-line, in Our county of Stafford, engineer, hath by his petiẽon humbly represented vnto Vs, That in Staffordshire and some other parts of Our kingdom there is a manufacture carried on of making white pots, the chief ingredient of which is flint stone, and the method hitherto vsed vsed in preparing whereof has been by pounding or breaking it dry, and afterwardꝑ sifting it through fine lawns, which has proved very destructive to mankind, insomuch that any person ever so healthfull or strong working in that business cannot probably survive above two yeares, occasioned by the dust sucked into his body by the air he breaths, which being of a ponderous nature fixes there so closely that nothing can remove it, insomuch that it is now very difficult to find persons which will engage in the business, to the great obstrucẽon and detriment of the said trade, which would otherwise by reason of the vsefulness thereof

be of great benefit and advantage to Our kingdom ; that the peticoner has with great pains and expence invented and brought to perfeccon an engine or new method for the more expedition working the said flint stone, whereby all the said hazardꝯ and inconveniences attending the same will effectually be prevented ; that he has at his own charge made severall experiments of his said invencon, whereby he fully knows the same will answer the endꝯ above proposed in every particular, to the manifest improvement and advantage of the said manufacture, and preserving the lives of many of Our subiects employed therein, and proposes to performe the same in manner hereinafter described, vizt : The flint stones are first sprinkled with water, insomuch that no dust can arise to the hurt or damage of the workmen, then crushed as small as sand by two large wheels of the bigness and shape of mill stones, made of iron, to turne round upon the edges by the power of a water wheel, and afterwardꝯ conveyed into large pans made of iron for that purpose circular, in which there are large iron balls which by the power of the water wheel above named are driven round by such a swiftness of motion that in a little time the flint stones so broken are made as fine as oyl it selfe, without the vse of lawns, and when so done by turning of a cock empties it selfe into casks provided for that purpose, and so kept therein for the vses above menconed.

From Letters Patent—**Rolls Chapel.**

A.D. 1728 . . . . N° 500.

CHAPMAN.

Making a One Horse Chaise or Chair with Two Wheels.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting : Whereas Our trusty and welbeloved William Chapman, of Our city of London, coach and coach harness maker, hath by his peticon humbly represented unto Vs, That he hath with great pains, labour, and expence found out, invented, and brought to perfeccon a chaise or chair with two wheels, to be drawn with one horse in or between a pair of shaftꝯ, which is so contrived as to quarter the rodds by the person riding in it, without let or hinderance, so as to keep exactly in the coach track, by which meanes the person in such carriage may travel with more expedition, safety, and pleasure to himself and horse than anything of the like nature hitherto invented ; that by meanes of the said invention when the horse is vpon a full trott, or any swifter motion the better, by only setting a foot vpon a spring, and pulling a small line for that purpose fixed to the carriage, the travellor may with ease imediately throw off either wheel into the coach track, as he shall find most covenient.

From Letters Patent—**Rolls Chapel.**

A.D. 1728 . . . . N° 502.

WOOD.

Making Raw Iron or Iron Metal in an Air Furnace with Pit Coal.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting : Whereas Our trusty and welbeloved William Wood, Esquire, has by his petition humbly represented Vs, That his son, Francis Wood, having obtained a Patent from Our late Royal Father for making pig or sow iron in an air furnace with pit coal, he assigned the same to the petitioner, who hath made great improvementꝯ by the invencon of

a new way and manner of performing the operation different from what has been hitherto ever practised, whereby he will be able to supply the nation with all the iron there shall be occasion for, and prevent the buying of iron from foreign partꝭ, which amountꝭ to about twenty thousand tunns yearly, and is most paid for in ready money, to Our great disadvantage and loss; that the iron made from the stone or ore by this new way of performing the operacõns in an air furnace being different from and much better and finer than sow or pig iron cannot come vnder that denominacõn, but should be called raw iron or iron metal preppared; and the petic̃oner having humbly prayd Vs to grant vnto him, his executors, administrators, and assignes, Our Royal Letters Patent for making raw iron or iron metal prepared in an air furnace with pit coal for the term of fourteen yeares.

From Letters Patent—**Rolls Chapel.**

A.D. 1728 . . . . N° 504.

STAMMERS.

Ingredient for Rectifying Spirits.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas William Stammers hath by his petition humbly represented vnto Vs, That he hath with much labour and study and at a great expence invented, found out an art, and discovered a new ingredient by which he can meliorate or rectify spirits distilled from molossos, sugar, &c, in such a manner as will render them safe and plesant; that the said art and invention haveing been found out to render such spirits equally wholesome with French brandy will be of vniversall benefit, occasion a greater revenue to Vs, and enable the exercisers of such art to bear chearfully any duty that is or shall be laid on spirits; that the common methods now vsed in rectifying spirits by aquafortis, spirit of vitrol, and other vnwholesome ingredientꝭ are extreamly pernicious to Our subiectꝭ; that no person besides the petitioner hath ever invented or found out the said new method of rectifying spirits, or made vse of the same ingredient for that purpose; that in regard the exercise of the said art or invention will be of such publick vse and benefit, and that the petitioner is ready to communicate the said art to others of Our subiects vpon reasonable terms, so as to have the same vniversally practised, he hath therefore humbly prayed Vs to grant him Our Royal Letters Patents for the sole benefit, vse, and exercise of the said art or invention of meliorating and rectifying spirits drawn from malt, molosos, and other liquors by the vse of the said new ingredient, for the term of fourteen yeares, pursuant to statute in such case made and provided.

From Letters Patent—**Rolls Chapel.**

A.D. 1729 . . . . N° 506.

LIVEINGS.

Making a Compound Manure.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these p̃sents shall come, greeting: Whereas Our trusty and welbeloved Thomas Liveings, gentleman, hath by his petic̃on humbly represented vnto Vs, That he hath at a very great expence and repeated experiment invented, found out, and brought to perfec̃on a method of makeing a compond manure for enriching and mending all sorts of land at one third part of the expence lesse

than in the common method of manuring land amounts to, not only from the cheapness but also for goodness in causing the land to produce one third in quantity more than any other manure, and by preserving the wheat from smutt, and killing the grubbs which sometimes destroy whole fields of corne, and it is also of that richnesse in its nature as to preserve the land for three yeares without any other mannure, as hath been experienced by several substantial farmers who are resolved to dress all their land therewith, and have bespoke large quantities for that purpose; that the said compound manure will not only be very beneficial to Our subiects, but will also greatly augment our revenue; some of the ingredients thereof which were never vsed for the purposes above mentioned by any other person pays so great a duty that for every eight bushells of the said compound which is vsed in dressing an acre of land the duty will amount to seven shillings at least; that as the comon method of manureing of land is become so very expensive in most parts of Our kingdom which the meaner sort are not able to bear, by reason whereof their land do's not produce above one third of the crop as it would if well manured, whereby many of our poore subiectꝭ labour vnder great hardships, and several cattle many times perish by the severities of the winter for want of hay and straw.

From Letters Patent—**Rolls Chapel.**

A.D. 1730 . . . . . N° 515.

KAY.

Engine for Making, Twisting, and Cording Mohair and Worsted, and Twining and Dressing Thread for the use of Button Makers, Tailors, and Others.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas John Kay, of Bury, in Our county of Lancaster, reed maker, hath by his peticon humbly represented vnto Vs, That he hath by long study, application, and expence found out and invented a new engine for making, twisting, and cording mohair and worsted, and twining and dressing of thread fit for the vse of button makers, taylors, and all others working with corded mohair, worsted, and twined thread, whereby one person by turning the main wheel with the hand only causeth the engine of its selfe to cord mohair, worsted, and twined thread of all sorts, finishing it at once from off the spindle, in a small room, with much less trouble than by the common method, and so much expedition that greater quantities can be made in one day by the said engine, and much better than in the method hitherto practised can be done in three days, and the mohair and thread made more merchantable and fit for vse than by any other manner heretofore vsed to the great benefit of the publick; that in regard the petitioner is the first and sole inventor thereof, and that the engine is new and hath not hitherto been vsed in Great Britain except by the peticoner only, and his apprence by his direccon and communication.

From Letters Patent—**Rolls Chapel.**

A.D. 1731 . . . . N° 527.

MORSE.

Organ Moved by Clockwork, Jack, or Winch, the Music Pricked on both Sides of Leaves of Half-inch Wainscot, and the Bellows Worked by the Hand or Feet.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Justinian Morse, of Chipping Barnet, in Our county of Hertford, hath by his peticon humbly represented unto Vs, That he has by great study and many expensive experiments found out and brought to perfection a

new organ, with either the open diapazon or the principal in the front, with one or more sets of keys, the bellows to go with either the feet or the hands, by which any person, tho' unskilled in musick, may be taught in an hour's time to play with great exactness and with their proper graces, either single or double, with preludes and interludes, all psalm tunes, fuges, voluntarys, and anthems that are usually sung in churches or chappells, or any other musick tho' never so difficult, of what length or compass soever; and that by this invention a fuller thorough bass may be play'd than can possibly be performed by the hands or fingers alone on the comon keys, and this is performed intirely without rowls or barrels, and in a third part of the room, the musick being prickt on both sides of leaves of half inch wainscot, eight or ten psalm tunes being conteined on a board about the size of a large sheet of paper, and may be worked by clock work, jack, or winch, and is made after a new method to play louder or softer by a division on the sound board; and that this organ may be made for a much lower price than all others heretofore, and therefore will be very proper to be made use of in churches or chappells in small parishes that are unable or unwilling to be at the expense of the constant attendance of an organist, or in gentlemen's houses or private familys.

From Letters Patent—**Rolls Chapel.**

A.D. 1731 . . . . N° 529.

THORNHILL.

Making the Rims of Coal Waggon Wheels with Iron or Steel Ribs, and Fastened on by Bolts, Rivets, and Screws.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Elias Thornhill, of Sunderland by the Sea, in our county of Durham, white smith, hath by his petiĉon humbly represented unto Vs, That he, having observed the great distruction of the best timber trees in severall parts of Our dominions, and finding the same mostly to proceed from the cutting and vsing the same in large quantities for coal waggon wheels, which are made out of solid timber trees, and are about a yard and ten inches diameter, and seven or eight inches thick, which waggon wheels seldom last above a year or two; that the petiĉoner hath with great labour, pains, and expense invented, contrived, and brought to perfection a new way or method of making the rim or edge of the said wheels with iron or steel, and with iron ribbs or tabbs, and iron bolts, rivets, and screws for the fastening the same, which the petiĉoner (having made severall experiments thereof at a great charge), knows will more effectually answer the end for the same use and purpose, to all persons who shall think proper to make use of the said invention, and will preserve the wood of the said wheels and the rails which they go upon from wearing, and will last many years longer than those now used, which are not done with iron or steel, nor rimmed or edged with any other sort of metall to preserve the same and the rails from wearing; and the said waggons by the said invention will carry considerably more coals than usual, and the same will be, considering the length of time they will last, much cheaper and much more serviceable, and for the great use and convenience of all gentlemen and others interested and concerned in coal mines and the coal trade, and will entirely prevent the destruction of thousands of timber trees in every year, to the manifest benefit and advantage of the publick, not only in the coal trade, and preserving the timber trees for ships andother vessells, butfor the benefit and advantage of the nation in generall.

From Letters Patent—**Rolls Chapel.**

A.D. 1731 . . . . N° 530.

POPE.

Marbling Paper for Bank Notes, Cheques, &c.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Samuel Pope, citizen and draper, London, hath by his petiĉon humbly represented unto Vs, That the practice of counterfeiting of bank and other notes, &c at this time appears very notorious, to the great detriment of the trade and coñerce of this kingdom; and that the making use of paper marbled with a margent, for merchants notes, bills of exchange, companys notes or bonds, receipts for subscripĉons, or any other instruments that admit of a cheque, being generally allowed to be the most effectual remedy to prevent so great a evil, he has by long study and with great industry invented and brought to perfection a new art of marbling paper with a margent, never practised by any person whatsoever before he invented it, which is performed by a method entirely new, by taking off the colours from a body of water prepared after a particular manner, with a proper strength for supporting the said colours and make them flow upon the surface it, whereby the said colours are more easily taken off upon paper, which will be of very great service to the publick by preventing the counterfeiting of such notes, bills, bonds, &c.

From Letters Patent—**Rolls Chapel.**

A.D. 1731 . . . . N° 532.

COPPIN.

Fluxing and Fixing Mundic into a Metal and Extracting Silver therefrom.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Elizabeth Coppin, widdow, hath by her petiĉon humbly represented unto Vs, That she has been severall years at very great expense and trouble in finding out an art of fluxing and fixing mundick, and reducing that sulphureous and volatile mineral into a metal, which till this discovery has been considered as a crude our or marchasite, and though many have tryed to flux and fix it, yet when fluxed or melted it has often turned to a dirty powder or dross, and the petiĉoner is the only person who has invented and brought to perfecĉon a method of fluxing and fixing in into a metal, and extracting silver from it; that this discovery will be of great advantage to the publick, since the mundick at present is in a manner useless; and this new invention will imploy a great many poor people, and be an improvement of the estates where it is found.

From Letters Patent—**Rolls Chapel.**

A.D. 1732 . . . . N° 536.

BENSON.

Apparatus for Crushing and Grinding Flint in a Moist State for Making White Ware.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Thomas Benson, engineer, hath by his petiĉon humbly represented unto Vs, That he has at a very great expense invented and brought to perfeccon a new engine or method for grinding of flint stones, being the cheif ingredient used in making of white wares, such as pots and other vessells, a manufacture carried on in Our county of Stafford and some other parts of this Our kingdom; that the common method hitherto vsed in preparing the same hath been by breaking and pounding the stones dry, and afterwards sifting the powder through fine lawns, which hath proved very destructive to mankind, occasioned by the dust sucked into the body, which, being of a ponderous nature, fixes so closely upon the lungs, that nothing can remove it, insomuch that is very difficult to find persons to engage in the said manufacture, to the great detriment and decay of that branch of trade, which would otherwise from the usefullness thereof be of great benefit and advantage to Our kingdom; that by the petitioner's invention the flint stones are sprinkled with water so that no dust can rise, and then ground as fine as sand with two large stones made to turn round upon the edges by the power of a wheel worked either by wind, water, or horses, which is afterwards conveyed into large stone pans made circular, wherein are placed large stone balls, which by the power of such wheels are driven round with great velocity that in a short space of time the flint stones so broken are reduced to an oiley substance, which by turning of a cock empties itself into casks provided for that purpose; that by this invention all the hazards and inconveniencies in making the said manufacture in the coñon way will be effectually prevented, and in every particular tend to the manifest improvement and advantage thereof, and preserving the lives of Our subiects imployed therein.

From Letters Patent—**Rolls Chapel.**

A.D. 1733 . . . . N° 540.

LUGG.

Means or Apparatus for Disengaging Horses from Coaches and other Vehicles.

GEORGE THE SECOND, by the Grace of God, and so forth. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Thomas Lugg, of Our city of London, gentleman, hath by his petition humbly represented unto Us, That diverse of Our good subiects have heretofore lost their lives and others have sustained great mischeifs by the running away of horses with coaches, charriotts, chaise, and other four wheeled carriages, and that he has by long study, labour and pains invented and found out effectual means whereby to prevent the like inconveniences for the future; and by his affidavit it appears that the same is done by drawing of a proper string, which will cause the holdfast or bearer that will be fixed to the flutchills to let loose the detainer, and thereupon a barr of iron, turning the chains or harness with the swivells and other fastnings, will be at liberty, by which means both the riders in and drivers of the coaches, chariotts, chaises, and other

four wheeled carriages will have it in their power to free the same from any number of horses whenever they shall think themselves in danger; and that all the work will be so strong, sure, and certain as not to fail to answer on all occasions of what sort soever the ways or weather shall be, and in all probability will last as long as other the works or materialls.

From Letters Patent—**Rolls Chapel.**

A.D. 1733 . . . . N° 542.

KAY.

Machine for Opening and Dressing Wool; Shuttle for Weaving Cloths.

GEORGE THE SECOND, by the Grace of God, and so forth. To all to whom these presents shall come, greeting: Whereas John Kay, of Bury, in Our county of Lancaster, reedmaker, hath by his petition humbly represented unto Us, That he hath observed that the common method of opening and dressing of wooll for the carder is by beating it with two small sticks on an hurdle, in order to drive out the dust and make it fitt for working, by which method it is very laborious and extreamly difficult so thoroughly to prepare and clean the wooll and make so fitt for the carder as it ought to be; that the only method now practised in weaving of broad woollen and linnen cloths is by the use of two pair of treddles, one on the right hand and the other on the left, and a shuttle made of box near two feet long is cast by two weavers from the one to the other, each pulling the layer at the end at which he sitts to strike the thread or shoot close the cloth, which method must be with great uncertainty, and cannot be exact, because if the weavers do not cast the shuttle and pull the layer with equal strength and time the cloths must be consequently wrought uneven and drove closer on the one side than the other; that the petitioner hath by long study, application, and expence invented and brought to perfection a new engine or machine for the better opening and dressing of wooll, which new invention consists of a wheel and two rowls fixed on each side, an hurdle with tappetts, and many laths of wood, each about four feet long, five inches broad, and a quarter of an inch thick, fixed on iron rodds, by means whereof and turning the wheel the laths are raised, which being each repulsed with a wooden springe smite briskly and evenly on the wheel, whereby the same will not only be easier opened but be better cleaned and made much fitter for the carder; and that he hath likewise found out and contrived a new invented shuttle for the better and more exact weaving of broad cloths, broad bays, sail cloths, or any other broad goods, woollen or linnen, which shuttle is much lighter than the former, and by running on four wheels moves over the lower side of the webb or spring on a board about nine feet long, put under the same and fastned to the layer, and which new contrived shuttle, by the two wooden tenders invented for that purpose and hung to the layer, and a small cord commanded by the hand of the weaver, the weaver sitting in the middle of the loom, with great ease and expedition, by a small pull at the cord, casts or moves the said new invented shuttle from side to side at pleasure, and also strikes the layer by his pulling it in the middle uniformly over the peice, makeing it unavoydably even and much truer and better than by any method heretofore used, by meanes whereof and inlarging the loom and board underneath cloths may be evenly and substantially made of any reasonable breadth soever, and with less toil and more expedition than before; that the opening and dressing of wooll and weaving of woollen and linnen cloths by the petitioners new inventions will be much better and more expeditiously wrought and the clothes made many degrees wider than they can be in the method hitherto practised, to the great improvement of the said manufactures in this kingdom, and the promoting of the sale thereof in the foreign marketts, and will be of the utmost benefit and advantage to the weaving trade in general.

From Letters Patent—**Rolls Chapel.**

A.D. 1734 . . . . N° 544.

MEINZIES.

Apparatus for Thrashing Grain,—a Row of Flails Fixed in an Axis Turned Backwards and Forwards.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved Michael Meinzies, Esquire, hath by his petition humbly represented unto Us, That having studyed mathematicks, and applyed himself sometime to mechanicks, he fell upon an invention for threshing grain, which with a long tract of labour, thought, and experiments, joined to a good deal of expence, he has brought to a great simplicity and perfection; that the said machine is moved by any regular power, and threshes with common swipples, by which the grain will be threshed at farr less expence, and two per cent. (if not more) of the grain will be threshed out of the straw more than the common way, from both which a very considerable advantage will arise to all farmers, and at length to Our landed subjects; that he is the sole inventor of the said machine or invention for threshing corn or other grains, as mentioned in his said petition, which threshes the grain with a row of flails fixed in an axis turned backwards and forwards, and so threshes the grain on both sides.

From Letters Patent—**Rolls Chapel.**

A.D. 1734 . . . . N° 545.

PERROTT.

Furnace for Melting and Preparing Glass.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Humphry Perrot, of Our city of Bristol, glass maker, hath by his petition humbly represented unto Us, That he hath been bred up and followed the trade and mystery of a glassmaker, and for some years has been endeavouring to make finer metal than heretofore, as well as to render it cheaper to Our subjects, which at length he has accomplished by inventing a furnace to contain double bottom potts or any others for the better melting, preparing, and preserving all sorts of glass wares, which furnace is contrived in a new manner with artificial draughts to it, whereby to force the heat of fire the sooner to perform its office, as well as a furnace with artificial draughts for the better warming and flashing of crown glass, by feeding it with fewell at teasing holes, which will much reduce the expense of coal; and hath also found out a new method for the more effectual preserving all sorts of window glass when nealing in the kiln, by leaving off drossers and using in their stead mathematical racks made of iron, clay, or stone, or any thing else that will endure the fire.

From Letters Patent—**Rolls Chapel.**

A.D. 1734 . . . . N° 550.

HADLEY.

Quadrant for Taking the Altitude of the Sun, Moon, or Stars at Sea; Level to be Fixed to a Quadrant for Taking Meridional Altitudes at Sea.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved John Hadley, of East Barnet, in Our county of Hertford, Esquire, hath by his petition humbly represented unto Us, That he has by long study and application, and at a very great expence, invented and contrived an instrument or quadrant for taking at sea the altitude of the sun, moon, or starrs, as also any other angles, by means of two successive reflections of one of the objects from two several plates of looking glass or polished metal, by which that object is brought to coincide with the other, and that an experiment has been made of this instrument in a small vessel, under the disadvantage of a rough sea, wherein the observations made thereby were found much more consistent than what are usually seen in those made on board a large ship in smooth water, and by consequence may be of signal use to Our royal navy, and to the trade and navigation of Our kingdoms; and that he has also invented a new levell to be fixed to a quadrant for taking meridional altitudes at sea, consisting of spirits of wine contained in a tube of glass, which hath within it a small hole to streighten the passage of the liquor, by which the motion of it is so steady and regular that thereby an altitude may be taken at sea, altho' the horizon or edge of the sea be not visible, much better than by any other instrument heretofore used for that purpose, and therefore he conceives will also be of considerable use in navigation; he hath therefore most humbly prayed Us to grant him Our Royal Letters Patent for the sole making and vending the said instruments or quadrants for the term of fourteen years, according to the statute in such case made and provided.

From Letters Patent—**Rolls Chapel.**

A.D. 1738 . . . . N° 561.

KAY.

Upright Windmill for Raising Water, and for Draining Mines and Lands.

GEORGE THE SECOND, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Our trusty and welbeloved John Kay, of Bury, in Our county of Lancaster, engineer, has by his petition humbly represented unto Us, That he has by study, long application, and expence found out and invented a new engine or machine, which he calls an upright windmill, being to be moved cheifly by the wind, and is proper for raising of water, either for draining of lands or mines, or furnishing cities, towns, or gentlemen's seats with water, and applicable to many other purposes where great strength and force is required; which engine consists of two upright posts of timber strongly fixed in the ground, and a cross beam tying them together at the heads; in the middle betwixt the two posts is placed a moving shaft or runner with center pins and sockets both above and below for the shaft to turn on, in which shaft are placed eight arms or cross pieces, horizontally to which arms are hung four sails on moving frames, which sailes, when spread or braced, receive the wind without shifting the engine, let it blow from any point whatsoever, and by

Kay's Patent for Making a Windmill for Raising Water and Draining Mines and Lands.

means of the sails opening and shutting like a door, and a brace or stay line on the back thereof, are in full sail on one side the shaft, and come up edgeways on the other, till they have passed the center at the shaft and then come into full sail again, being so continued by their opening and shutting to receive the full force of the wind going forward, and not being impeded by it in the return, by means whereof the shaft or runner is moved round with great force and swiftness, which force may be increased at pleasure by adding one or more teer of arms and sails in the shaft one over another, according as the heighth thereof will admitt; at the foot of this shaft is fixed a cogg wheele or rundle that moves round with the same, and is applicable to and proper to perform all or most of the operations that are performed by other wheels that are moved either by wind or water, and has a further advantage that, by adding one arm to the shaft, the mill, in case of failing of the wind or other necessity, may be kept in operation by the strength or draught of horses: That the petitioner having often observed that amongst the various ways of raising water from a mine or deep pitt there are two that are performed by buckets, the one by two buckets that alternately descend and ascend by an engine moved by the strength of horses, the other is by a chain of buckets which are fastned to a chain and decend with the mouths downwards and come up full with the mouths upwards by means of a ragg wheel on which the chain is hung; that the first of these methods is attended with this inconvenience, that whenever the bucket is drawn up the horse must stand still till it is emptied, and then turn and draw the contrary way to bring up the other bucket, and so alternately during the working of the engine; the other method by a chain of buckets is attended with this inconvenience, that no method hath yet been found out in hanging the buckets to prevent there frequent being broke either by the rag wheel on which they run, on the cham on which they hung, by reason whereof the method of a chain of buckets is become of little use, the utility very seldom answering the expence: That the petitioner hath found out two inventions that remedy both these inconveniences, the one is by a rundel fixed on a spindle with a double crank, two wheels placed over the pit or mine from whence the water is to be drawn, two ropes or chains, one end of each rope or chain being fixed to the crank and the other end after several wrapings round the axis of the wheel over the pitt, in proportion to the depth, and being fastned thereto, and two buckets hung by ropes or chains at these two wheels, that shall go down and draw up from the pitt as the wheels are moved, then fixing the rundle to the cogg wheel (which may be to the cogg wheel of the upright mill or any other), as the cogg wheel is moved by the shaft the rundle shall be moved by the cogg wheel, and the ropes or chains shall pull round the wheels over the mine or pitt, which, by means of the cranks, shall lett down and wind up two buckets alternately, one going down empty and the other coming up filled with water, and, by means of a ketch or hook at the top, made to discharge themselves into a trough or receiver for that purpose, performing this operation by means of the cranks, and due proportioning the wheels and ropes which makes the buckets descend and ascend alternately, although the prime motion be continually progressive and without retrogradation; the other remedy for inconveniences attending a chain of buckets is to have a rundle fitted to the cogg wheel of the first mover on a large spindle of wood, upon which spindle is to be fixed a large pully or ragg wheel, and on this ragg wheel or pully a chain extended to the water in the pitt or mine, to which chain are to be hung six, eight, or more buckets, fastned thereto by an iron chain at the top, and a few links of a chain at one side about the middle of the bucket, and guarded by two wooden hangers on the sides of each bucket, by means whereof the buckets thus hung and guarded are prevented from ever getting under the main chain or being crushed thereby, and yett hang so loose that they yeild to the chain, and descend with the mouth downwards into the pit and ascend to the top filled with water by a constant rotation, which these buckets discharge on the surface into a trough for that purpose.

From Letters Patent—**Rolls Chapel.**

A.D. 1741 . . . . N° 581.

PLEUNIUS.

Harpsichords, Lyrichords, and Spinnets.

GEORGE THE SECOND, by the Grace of God of Great Brittain, France, and Ireland King, Defender of the Faith, &c. To Our right trusty and welbeloved Councellor Philip Lord Hardwicke, Baron of Hardwicke, Our Chancellor of Great Brittain, greeting: We will and command, that under Our great seal of Great Brittain remaining in your custody, you cause these Our Letters to be made forth Patents, in form following: George the Second, by the Grace of God, &c. To all to whom these presents shall come, greeting: Whereas Roger Pleunius, of the parish of St George, Hanover Square, in the liberty of Westminster, harpsichord maker, hath by his petition humbly represented, That he hath by long study, application, and great expence found out and brought to perfection a new invention for the great improvement of and meliorating the musical instruments called harpsichords, lyrichords, which are harpsichords strung with catgut, and spinnetts, which new invention consists in the following particulars, (to wit): A set of bended levers, by the petitioner called pully levers, with their weights, swivells, and sliders, fixt by means of pointed pins or screws in upright cheeks or standards, which machine, or set of levers, with its appurtenances, being applyed and fixt to an harpsichord or lyrichord, keep the said musicall instruments constantly in tune; also a set of pleetrums wherewith to strike the strings of the said instruments instead of quills, which pleetrums, being made of ivory, tortoiseshell, or other materialls, are incerted in the tongues of the jacks, and fastened with pins, having shoulders behind, and springs made of hogs bristles under their forpast, with regulating screws behind the said tongues; these plectrums are both more durable than quills, and are not lyable like them to receive my alteration from the various effects of the weather, and greatly meliorate the sound of the strings; also a new set of stops, which are sockett holes wherein the jacks move, made of metal, which hinders either their swelling or shrinking through the influence of moist or dry weather, and thereby occasion the said jacks to perform their office with much more truth and exactness than they possibly can do in those made of wood; besides by this means the plectrums, which are fixt in the tongues of the jacks, in the room of the quills, are made to touch the strings of the said instruments with the utmost equality and exactness, also the keys that move the said jacks are square tubes, made hollow by means of four thin laths, being glewed together like small organ pipes, the better to prevent their warping, and thereby do make their motion more true and accurate when touched by the fingers, and are far superior and preferable to any keys hitherto used also by this invention the octave strings are kept in tune full as long as the unison strings, by means of iron or other metall pegs or screws, which are fixt in the body of the harpsichord, and appear through the belly thereof, and to which the said octave strings are at one end, and fastned to the tops of the said pegs or screws, which particulars have for these many years been greatly wanted for the improvement of string instruments that are touched or played on by keys, the invention of which has been time out of mind a desideratum by all the curious lovers of musick; that in regard the petitioner is the first and sole inventor thereof, and that the same have not hitherto been used in Great Brittain, save by the petitioner and those to whom he has communicated the same, he therefore humbly prays, that in regard to his great industry and expence in inventing and perfecting the said invention, consisting of the particulars aforesaid, and the advantage that by means therefore will accrue to the publick, Our Letters Patent for the sole use and benefit of the said invention may be granted to him for the term of fourteen years, according to the statute in such case made and provided.

From Letters Patent—**Rolls Chapel.**

A.D. 1745 . . . . N° 613.

PLENIUS.

Harpsichords and Spinnets.

GEORGE THE SECOND, by the Grace of God, and so forth. To all to whom these presents shall come, greeting: Whereas Roger Plenius, of the parish of S[t] George, Hanover Square, in the liberty of Westminster, harpsicord maker, has by his petition humbly represented unto Us, That he hath by long study, application, and great expence found out and brought to perfection a new invention for the great improvement of musical instruments called harpsichords and spinnetts, and taking away many defects and imperfections therein, which new invention, and particularly a stop in the said instruments which imitates the Welch harp, is contrived in the following manner (to witt): There are long square holes made quite through the bridge that lyes next to the tuning pegs, in which holes are placed little barrs (which the petitioner calls matadors) made of lead, brass, tin, ivory, and wood, at the upper end of one of the flatt sides of which are glewed small peices of wood, and on the bottom of those small peices of wood little bits of buckskin or other leather, which bits of wood thus lined at bottom with leather being by the weight of little bars press't down on the strings close to the pins that bear the strings on the said bridge produce a sound like that of a Welch harp; these mattadors also pass thro' a sett of under socket holes, and come to rest on a thin board that lyes under the wrest board wherein the tuning pegs stands, which thin board having a spindle glewed under it with pivots at each end fixt in pivot holes on each side of the said instruments moved to give liberty to the aforementioned matadors (at other times suspended by a steal spring) to descend on the strings and perform the office of the harp stop by means of a lever screwed to the left side of a harpsichord, and joyned by a wire or otherwise to one end of the said spindle, which is pulled down by a string, one end whereof is fastned to the hither end of the said lever and the other to a treadle lying on the ground under the said instruments, which treadle the foot pulling down whenever the harp stop is to be used, the fingers need never be removed from the upper row of the keys they were before playing on; and for the cutting the quills used in the said instruments to an equal length you take a piece of brass or other metal about four or five inches long, three quarters of an inch broad, and half an inch thick, on one side thereof is a grove to receive the flatt part of the jack where the quill projects, about an inch and an half from the top are two long perpendicular holes to receive the cloaths that are glewed on each side of the jacks, between which long holes even with their bottom is a little hole for the quill that is fastned to the tongue of the jack to enter in at when it is to be cutt to its true length, and that is performed by a small steel chizell fixt fast on the lower side of the said little hole, and a square peice of brass to the upper side of which is joyned a bar, and at the top is an ivory button to push it down with upon the quill that lyes immediately above the fixt steel chizell, there being a worm spring fixed to the inside that rests on the said square piece of brass to bring it back again after it has done its office, and to prevent the keys in the said instruments from rattling that part of each key where the center of motion is to be is hollowed out wider than the pin it is to move on, the bottom of which hole is closed by a peice of thin leather with a small hole in the middle of it just fitt for the pin it rests on, to the upper part of the key where the said pin comes through there is glewed a little frame, in the middle whereof is a long hole lined on each side with silk twist, so that the pin on which the key moves touches only those two soft substances at top and bottom; the broad ends of the keys where the fingers are applyed in playing are also perpendicularly perforated, on the underside of which are glewed little frames having long holes in them also lined on each side with silk twist, which holes are put over upright pins fastned in the hither part of the

Plenius's Patent for Making Harpsichords and Spinnets.

key frame, at the bottom of which pins close to the said frame lye round pieces of soft cloth to prevent the keys and jacks being over powered and strained by a heavy hand, and to prevent the tongues stitching to the sides of the jacks, by closing the tops of the jacks, making them thereby more firm and solid, so that their sides can never touch the tongues though squeezed ever so hard in taking them out of their stops and socket holes, or by replacing them; the little cloths which serve to stop the sound of the strings when the fingers retire from the keys, are by the petitioners invention so improved that they never stir from their places, being glewed fast with notches on each side of the jacks, and therefore always touch and deaden the sound of their respective strings equally; there are also bills of vellum glewed behind to top of the jacks to prevent their tongues from flying too far back when the quills on playing return under the strings, and that all the strings of the said instruments are layed in right horizontal lines, from the bridges that rest on the belly to the tail pins, where fastned by loops, as well as between the said bridges and the other bridges on the rest board, notwithstanding every string has the same angle which is required by lateral pressure for producing its true sound, contrived with great circumspection between two pins upon its bridge almost close together, so that the strings having no pressure downwards the belly is at full liberty to vibrate more equally than the belly of other harpsicords; by this means the sound of the said instruments is much meliorated, and their strings (especially the octave ones) are kept longer in tune than by any other method yet found out.

From Letters Patent—**Rolls Chapel.**

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ALPHABETICAL INDEX OF NAMES.

Name of Patentee.	Number of Patent.	Date.	Subject-matter of Patent.	Page.
AGAR, THOMAS - - -	254	13th Aug. 1687	Making rolled sheets of lead - - -	34
ANGELL, JUSTINIAN - -	183	25th Oct. 1675	Erecting and maintaining two lighthouses on Spurn Point - - - - - -	29
APLETRE, JOHN - - -	420	23rd May 1718	Raising silk by using an evaporating stove and egg chest; method of feeding silk worms - - - - - - - -	54
ARNOLD, MICHAELL - -	78	17th Feb. 1635	Heating brewing vessels, drying bricks, tiles, &c. with less fuel and smoke - -	17
AULEY, WILLIAM - - -	51	13th Aug. 1630	Use of peat for making and burning iron, &c.	13
AYLIFFE, JOHN - - -	78	17th Feb. 1635	Heating brewing vessels, drying bricks, tiles, with less fuel and smoke, &c. - -	17
BADDELEY, RICHARD - -	445	22nd May 1722	Making of pig iron streaks for binding cart and waggon wheels, also box smoothing iron - - - - - - - - -	61
BALL, EDWARD - - -	51	13th Aug. 1630	Use of peat for making and burning iron, &c.	13
BAYLY, LEWIS - - -	169	3rd April 1673	Mill for grinding seeds and wood; oil press; engine for cleansing and digging rivers, harbours, &c. - - - - - -	26
BENSON, THOMAS - - -	487	5th Nov. 1726	Apparatus for crushing and grinding flint in a moist state for the manufacture of white pots - - - - - - - - -	71
BENSON, THOMAS - - -	536	14th Jan. 1732	Apparatus for crushing and grinding flint in a moist state for making white ware -	77
BERRY, THOMAS - - -	402	18th Feb. 1716	Curing the sweepings of ships (pepper, tobacco, and oil) - - - - - -	52
BIRD, MICHAEL - - -	394	1st Dec. 1713	Drying malt and hops - - - - -	49
BRENT, ROBERT - - -	253	25th Jan. 1687	Furnaces for extracting metals from their ores - - - - - - - - -	34
BROWNE, HENRY - - -	435	12th Aug. 1721	Machine for beating hemp - - -	58
BULMER, JOHN - - -	73	18th July 1634	Raising ships and goods sunk in the sea -	15
BURGES, ROGER - - -	1	2nd March 1617	Engraving and printing maps - - -	3
CARDONELS, ADAM DE - -	249	9th Jan. 1686	Making paper and printing the Royal arms thereon - - - - - - - -	34
CHAMFLOWER, THOMAS - -	466	15th April 1724	Syphon or engine for clearing ships of water, draining mines and marshes, and for extinguishing fires - - - - -	66
CHAPMAN, WILLIAM - -	500	27th June 1728	Making a one horse chaise or chair with two wheels - - - - - - - -	72

Name of Patentee.	Number of Patent.	Date.	Subject-matter of Patent.	Page.
Chaumette, Isaac de la -	434	12th Aug. 1721	Cannon, fusees, and pistols; swords which serve for bayonets; powder flasks; two cases of pistols of which a carbine may be made; bomb or grenade; breast plates; fusee lock, firing fusees horizontally; machine to cure smoky chimneys; snuff boxes; penknife and pocket knife; pocket scissors; buckles; machine for drawing lotteries; double counters for drawing lotteries; turning mattress for armies and hospitals; picture serving as a tester to a bed, and an ornament to a room; coaches and chaises; preventing shipwreck: candlesticks and rings; lantern; machine for holding glasses at table - - -	57
Chiver, Robert - - -	105	17th May 1637	Instruments for raising water, draining and irrigating lands; planting trees; training hops on straw bands, &c. - - -	21
Clerk, Robert (Sir) - -	253	25th Jan. 1687	Furnaces for extracting metals from their ores - - - - - - - -	34
Clerk, Talbot - - -	253	25th Jan. 1687	Furnaces for extracting metals from their ores - - - - - - - -	34
Clowdesly, Paul - -	261	4th Nov. 1688	Weaving silk goods - - - -	35
Cole, Michael - - -	382	7th Aug. 1708	New kind of light (being a lamp with a globular glass) - - - - - -	46
Cole, Richard - - -	372	29th July 1704	Making lamp glasses for diffusing light -	44
Coppin, Elizabeth - -	532	8th Oct. 1731	Fluxing and fixing mundic into a metal and extracting silver therefrom - - -	76
Corcellis, Charles - -	247	15th Oct. 1685	Making pitch or tar - - - - -	33
Coster, John - - -	397	27th May. 1714	Engine for drawing water out of mines -	50
Coster, John (junior) - -	397	27th May 1714	Engine for drawing water out of mines -	50
Crumpe, Robert - -	8	9th April 1618	Pipes and instruments for draining and raising water - - - - - -	7
Crumpe, Robert - -	29	4th March 1624	Three engines for draining mines and raising water - - - - - - - -	11
Cumberland, John - -	427	14th April 1720	Heating planks of wood and making them pliant for bending the same in ship building - - - - - - - -	54
Darby, Abraham - -	390	18th April 1707	Casting iron bellied pots in sand only -	46
Davenant, Charles - -	254	13th Aug. 1687	Making rolled sheets of lead - - -	34
De Cardonels, Adam - -	249	9th Jan. 1686	Making paper and printing the Royal arms thereon - - - - - - - -	34
De Gruchy, Charles - -	249	9th Jan. 1686	Making paper and printing the Royal arms thereon - - - - - - - -	34
De La Chaumette, Isaac -	434	12th Aug. 1721	Cannon, fusees and pistols; swords which serve for bayonets; powder flasks; two cases of pistols of which a carbine may be made; bomb or grenade; breast plates; fusee lock, firing fusees horizontally; machine to cure smoky chimneys; snuff boxes; penknife and pocket knife; pocket scissors; buckles; machine for drawing lotteries; double counters for drawing lotteries; turning mattress for armies and hospitals; picture serving as a tester to a bed, and an ornament to a room; coaches and chaises; preventing shipwreck; candlesticks and rings; lantern; machine for holding glasses at table - - -	57

Name of Patentee.	Number of Patent.	Date.	Subject-matter of Patent.	Page.
De May, James	249	9th Jan. 1686	Making paper and printing the Royal arms thereon	34
Desaguliers, John Theophilus	430	25th June 1720	Applying the steam of boiling liquors for drying malt, hops, gunpowder, &c., baking, brewing, distilling; making salt, sugar, tar, &c.	55
Dewey, James	145	22nd April 1664	Making a mixed metal	27
Dickenson, Lyminge	101	9th Jan. 1637	Covering cloth with ormer shells	20
Dubison, Peter	1400	19th Nov. 1715	Printing and dyeing calicoes in grain	51
Duclen, Peter	261	4th Nov. 1688	Weaving silk goods	35
Dunning, Richard	451	23rd Sept. 1722	Poiser for preventing coaches overturning	63
Dunning, Richard	468	20th May 1724	Engine for raising or forcing water; rowing engine for forcing ships against winds and tides, &c.	67
Dupin, Nicholas	249	9th Jan. 1686	Making paper and printing the Royal arms thereon	34
Edwards, Talbot	405	29th June 1716	Making pitch, tar, and oil from roof stone	52
Edwards, William	480	28th June 1725	Making water pipes of earth or clay; cement for joining the same	70
Evans, Robert	407	31st July 1716	Endless chains and circular spring for turning roasting jacks, clocks, and water works	53
Ford, Edward	126	14th March 1640	Navigating vessels by oars and wheels turning on axletrees	21
Francke, Captaine Thorneffe.	48	31st July 1629	Instrument for draining	13
Francke, Captayne Thornefe.	83	25th June 1635	Furnaces for melting and smelting copper, tin, &c. with less fuel	17
Frank, Serieant Maior Thornef.	129	13th July 1660	Setting Furnaces to save fuel and lessen smoke	23
Gifford, Nathaniel	305	18th Oct. 1692	Printing and ornamenting papers	39
Gilbert John	9	16th July 1618	Water plough for taking up sands or banks out of rivers; engine for raising water	8
Godfrey, Ambrose	458	12th Nov. 1723	Extinguishing fires in houses and ships by means of casks containing a charge of gunpowder, water, and a chemical preparation	65
Greene, John	267	13th April 1691	Hanging coaches and chariots	37
Gregory, Edmond	101	9th Jan. 1637	Covering cloth with ormer shells	20
Gruchy, Charles De	249	9th Jan. 1686	Making paper and printing the Royal arms thereon	34
Hadley, John	550	22d Nov. 1734	Quadrant for taking the altitude of the sun, moon, or stars at sea; level to be fixed to a quadrant for taking meridional altitudes at sea	80
Hale, Michael	254	13th Aug. 1687	Making rolled sheets of lead	34
Hale, Thomas	145	22d April 1664	Making a mixed metal	27
Hale, Thomas	254	13th Aug. 1687	Making rolled sheets of lead	34
Hamme, John Ariens Van	191	27th Oct. 1676	Making tiles and porcelain	31
Hampton, Robert	51	13th Aug. 1630	Use of peat for making and burning iron, &c.	13
Hancock, Daniel	389	13th Nov. 1711	Iron boxes for the wheels of carriages	48
Harding, William	433	17th July 1721	Making sugar mills, and worms for making sugar	56
Harris, John	432	7th July 1721	Making and printing globular sea charts	55

Name of Patentee.	Number of Patent.	Date.	Subject-matter of Patent.	Page.
HAYES, JAMES - - -	132	16th May 1661	Forcing and raising water - - -	24
HENSHAW, MAIOR THOMAS -	145	22nd April 1664	Making a mixed metal - - - -	27
HILL, ABRAHAM - - -	143	3rd March 1664	Making carriages; guns and pistols; powder horn; instrument for breaking and dressing hemp and flax, and watering linen; pendulum for measuring time and finding out the longitude at sea - - -	25
HODGSON, MARMADUKE -	312	31st Jan. 1693	Engine for raising water and pumping ships	42
HOLT, RICHARD - - -	447	31st May 1722	Compound liquid metal for making artificial stone and marble - - - - -	62
HOLT, RICHARD - - -	448	13th June 1722	Mixture for making white ware - -	62
HOWARD, PHILLIP (Sir) - -	154	8th Oct. 1667	Graving ships and other vessels - -	28
HUTCHINSON, SAMUELL -	146	20th July 1664	Making vessels for melting glass and metals, and saving fuel; making pot ashes -	27
HUTTON, THOMAS - -	307	20th July 1692	Mill for making paper; draining and raising water - - - - - - - -	40
JACKSON, BENIAMIN HABBAKKUK.	399	5th May 1715	Making carriages so as to prevent them overturning - - - - - -	51
JACKSON, BENIAMIN HABBAKKUK.	441	11th April 1722	Machine for preserving lives in case of shipwreck, and in case of the cramp in swimming for pleasure - - - - -	61
JACKSON, CHRISTOPHER -	242	2nd Oct. 1684	Making paper - - - - - -	32
JEROME, SARAH - - -	87	31st Oct. 1635	Machine for cutting scale-board - -	18
KAY, JOHN - - - -	515	8th May 1730	Engine for making, twisting, and cording mohair and worsted, and twining and dressing thread for the use of button makers, tailors and others - - -	74
KAY, JOHN - - - -	542	26th May 1733	Machine for opening and dressing wool; shuttle for weaving cloths - - -	78
KAY, JOHN - - - -	561	24th June 1738	Upright windmill for raising water, and for draining mines and lands - - -	80
KENT, RICHARD - - -	254	13th Aug. 1687	Making rolled sheets of lead - - -	34
KNAPPE, EDWARD - -	31	7th Jan. 1625	Making coaches, carts, and other vehicles -	12
LA CHAUMETTE, ISAAC DE -	434	12th Aug. 1721	Cannon, fusees, and pistols; swords which serve for bayonets; powder flasks; two cases of pistols, of which a carbine may be made; bomb or grenade; breast plates; fusee lock, firing fusees horizontally; machine to cure smoky chimneys; snuff boxes; penknife and pocket knife; pocket scissors; buckles; machine for drawing lotteries; double counters for drawing lotteries; turning mattress for armies and hospitals; picture serving as a tester to a bed, and an ornament to a room; coaches and chaises; preventing shipwreck; candlesticks and rings; lantern; machine for holding glasses at table - - -	57
LASSELLS, EDMOND - -	51	13th Aug. 1630	Use of peat for making and burning iron, &c.	13
LIVEINGS, THOMAS - -	506	19th Feb. 1729	Making a compound manure - - -	73
LOFTING, JOHN - - -	319	4th April 1693	Instrument for making thimbles - -	43
LONDON, SAMUEL - - -	448	13th June 1722	Mixture for making white ware - -	62
LUGG, THOMAS - - -	540	11th May 1733	Means or apparatus for disengaging horses from coaches and other vehicles - -	77
LYDALL, ROBERT - - -	368	13th June 1702	Fluxes for smelting tin in a reverberatory furnace without using bellows - -	44

Name of Patentee.	Number of Patent.	Date.	Subject-matter of Patent.	Page.
LYDDALL, ROBERT - -	374	23rd July 1705	Precipitating gold and silver from tin, and smelting tin with culm and sea-coal -	44
MARBURY, WILLIAM - -	222	31st July 1682	Making salt, and draining brine pits and mines - - - - - - - -	32
MARSHALL, RALPH - -	286	2nd Jan. 1692	Making spinnall yarns - - - - -	38
MARSHALL, RALPH - -	289	22nd Feb. 1692	Making spinnall yarn - - - - -	38
MASON, WILLIAM - - -	466	15th April 1724	Syphon or engine for clearing ships of water, draining mines and marshes, and for extinguishing fires - - - - - -	66
MAY, JAMES DE - - -	249	9th Jan. 1686	Making paper and printing the Royal arms thereon - - - - - - -	34
MEINZIES, MICHAEL - -	544	15th Feb. 1734	Apparatus for thrashing grain,—a row of flails fixed in an axis turned backwards and forwards - - - - - -	79
MIDDLETON, HUGH - -	19	2nd July 1621	Draining grounds - - - - - -	9
MILL, HENRY - - -	376	12th April 1706	Springs for coaches, chariots, and other vehicles - - - - - - -	45
MILL, HENRY - - -	395	7th Jan. 1714	Machine for transcribing letters - -	49
MILLER, JOHN - - -	4	1st July 1617	Making oil - - - - - - - -	5
MILLER, THOMAS - - -	440	30th March 1722	Burning bricks, tiles, and lime - -	60
MILLS, ISAAC - - -	456	27th June 1723	Heating wool combs and plates for pressing cloth - - - - - - - -	64
MOORE, THOMAS - - -	245	13th April 1685	Making alum and alum glass - - -	33
MORSE, JUSTINIAN - -	527	13th April 1731	Organ moved by clockwork, jack, or winch, the music pricked on both sides of leaves of half-inch wainscot, and the bellows worked by the hand or feet - - -	74
MURRAYE, THOMAS - -	5	11th Jan. 1618	Making sword blades, &c. - - -	6
NEALE, THOMAS - -	186	12th Nov. 1675	Pump for draining mines, &c. - - -	31
NEWSHAM, RICHARD - -	439	26th Dec. 1721	Engine for extinguishing fires - - -	59
NEWSHAM, RICHARD - -	479	5th June 1725	Engine for extinguishing fires and raising water to any height - - - -	69
NIBLET, DANIEL - -	430	25th June 1720	Applying the steam of boiling liquors for drying malt, hops, gunpowder, &c., baking, brewing, distilling, making salt, sugar, tar, &c. - - - - - -	55
NUTTALL, THOMAS - -	476	5th April 1725	Engine for supplying towns for water, and for draining mines, lands, and marshes -	68
OLDNER, GEORGE (senior) -	352	24th Sept. 1697	Pumps and contrivances for preserving ships and vessels from the effects of leakage -	43
PAION, DANIEL - - -	478	3rd June 1725	Mixture to be applied to the bottoms of vessels for keeping them free from worms, and preserving them from decay - -	69
PECK, DANIEL - - -	375	15th March 1706	Making and refining salt in a reverberatory air-furnace, to save fuel - - -	45
PERROTT, HUMPHRY - -	545	15th Feb. 1734	Furnace for melting and preparing glass -	79
PIPER, JOHN - - -	438	8th Nov. 1721	Compound of chalk and sea water for increasing the growth of grain, pulse, and grass - - - - - - - -	59
PLENIUS, ROGER - - -	613	10th July 1745	Harpsichords and spinnets - - -	83
PLEUNIUS, ROGER - - -	581	30th Dec. 1741	Harpsichords, lyrichords, and spinnets -	82
POPE, SAMUEL - - -	530	20th May 1731	Marbling paper for bank notes, cheques, &c.	76
POWNOLL, ISRAEL - -	391	3rd April 1712	Machine for taking up ballast, sand, &c. -	48
PRIME, ANDREW (senior) -	352	24th Sept. 1697	Pumps and contrivances for preserving ships and vessels from the effects of leakage -	43

Name of Patentee.	Number of Patent.	Date.	Subject-matter of Patent.	Page.
PRUSEN, HILDEBRAND - -	75	19th Nov. 1634	Stoves or furnaces for drying and heating -	16
RAMSEYE, DAVID - - -	53	11th Nov. 1630	Separating gold or silver from tin, lead, and copper - - - - - - - -	14
RAMSEY, DAVID - - -	78	17th Feb. 1635	Heating brewing vessels, drying bricks, tiles, &c. with less fuel and smoke - - -	17
RATHBORNE, ARON - -	1	2nd March 1617	Engraving and printing maps - - -	3
REEVES, RICHARD - - -	187	18th Nov. 1675	Foiled glass for casting and spreading light; glass pipes to hold candles or lamps -	31
REGNAULT, MARIN - - -	249	9th Jan. 1686	Making paper and printing the Royal arms thereon - - - - - - -	34
RIPELY, THOMAS - - -	447	31st May 1722	Compound liquid metal for making artificial stone and marble - - - - -	62
ROBERTS, ALEXANDER - -	88	1st Dec. 1635	Making white and red lead - - -	19
ROSSE, JAMES - - -	88	1st Dec. 1635	Making white and red lead - - -	19
ROTSIPEN, ARNOLD - -	71	24th June 1634	Instruments for cutting polishing, filing, turning, boring, grinding, sawing, and planing metals; for cutting screws; for making files and bullets; for making and rifling barrels; for pressing or printing; and a hammer moved by water or horse power - - - - - - -	14
SAVERY, THOMAS - - -	379	1706	Making double hand bellows - - -	46
SENEX, JOHN - - - -	432	7th July 1721	Making and printing globular sea charts -	55
SCHMETTAN, SAMUEL - -	384	12th July 1709	Making salt - - - - - - -	47
SCOBBELL, FRANCIS - -	467	20th May 1724	Water wheel for raising water and working mills, &c. - - - - - - -	66
SHALES, ROBERT - - -	249	9th Jan. 1786	Making paper and printing the Royal arms thereon - - - - - - -	34
SHARPE, SAMUEL - - -	17	15th July 1620	Making chamletts - - - - -	9
SHELDON, RICHARD - -	455	27th May 1723	Machine for packing hops - - -	64
SHERARD, WILLIAM - -	261	4th Nov. 1688	Weaving silk goods - - - - -	35
SHUTTLEWORTH, EDWARD -	414	12th July 1717	Machine for draining coal pits, mines, &c. -	53
SMARTFOOT, FRANCIS - -	262	8th Nov. 1689	Machine for raising goods sunk in the sea ("Sea Crab") - - - - -	37
SMETHWICK, FRANCIS - -	149	14th May 1666	Grinding optical glasses - - - -	28
SMITH, ANTHONY FORESTER -	310	1692	Heating water for melting and refining sugars - - - - - - - -	41
STAMMERS, WILLIAM - -	504	4th Nov. 1728	Ingredient for rectifying spirits - - -	73
STAPLETON, JOHN - - -	318	17th March 1693	Two diving machines; purifying air in the same; supplying them with air - -	42
STONE, BENIAMYNE - -	97	9th July 1636	Making swords, &c. - - - - -	19
STRACHY, HOWARD - -	75	19th Nov. 1634	Stoves or furnaces for drying and heating -	16
TAYLOR, SAMUEL - - -	453	6th Feb. 1723	Engine for stamping and dressing thread -	63
TESHMAKER, JOHN ENGLE-[BERT.	286	2nd Jan. 1692	Making spinnall yarns - - - -	38
TESHMAKER, JOHN ENGLE-[BERT.	289	22nd Feb. 1692	Making spinnall yarn - - - -	38
THORNHILL, ELIAS - -	529	20th May 1731	Making the rims of coal waggon wheels with iron or steel ribs, and fastened on by bolts, rivets, and screws - - - -	75
TINDALE, MATTHEW - -	438	8th Nov. 1721	Compound of chalk and sea water for increasing the growth of grain, pulse, and grass - - - - - - - -	59
TOGOOD, THOMAS - - -	132	16th May 1661	Forcing and raising water - - - -	24

Name of Patentee.	Number of Patent.	Date.	Subject-matter of Patent.	Page.
TOMLYN, GEORGE - - -	128	5th Feb. 1660	Texting and flourishing on vellum and parchment - - - - - - - -	22
TOMLYN, GEORGE - - -	137	28th March 1662	Printiug the Royal arms, &c., with a rolling press and engraven plates - - -	25
VAN HAMME, JOHN ARIENS -	191	27th Oct. 1676	Making tiles and porcelain - - -	31
VREEN, WILLIAM - - -	430	25th June 1720	Applying the steam of boiling liquors for drying malt, hops, gunpowder, &c., baking, brewing, distilling, making salt, sugar, tar, &c. - - - - - - -	55
WARTER, JOHN - - -	254	13th Aug. 1687	Making rolled sheets of lead - - -	34
WATLINGTON, JOHN - -	436	9th Sept. 1721	Cutting the wool from beaver, coney and hare skins, for making hats - - -	53
WATSON, FRANCIS - - -	145	22nd April 1664	Making a mixed metal - - - -	27
WATSON, FRANCIS - - -	154	8th Oct. 1667	Graving ships and other vessels - - -	28
WEBBE, BENEDICT - -	30	16th Dec. 1624	Making oil - - - - - - - -	12
WEISEHAMER, JEREMIAH -	385	26th July 1709	Mill for grinding sugar canes - - -	47
WEYMS, JAMES - - -	136	24th March 1662	Making ordnance; draining mines and lands; and raising weights - - - - -	24
WHEELER, WILLIAM - -	127	24th June 1642	Raising water; auger for boring wood; fixing piles without driving; raising weights	22
WHITE, HENRY - - -	473	23rd Dec. 1724	Engine for raising and discharging water in and out of ships, and for extinguishing fires therein - - - - - -	68
WILLIAMS, JOHN - - -	308	1692	Diving engine for taking up wrecks and ships lost in the sea - - - - - -	41
WILLIS, RICHARD - - -	29	4th March 1624	Three engines for draining mines and raising water - - - - - - - - -	11
WILKS, JOHN - - - -	396	2nd April 1714	Mill for dry grinding of dye woods - -	50
WILSON, HENRY - - -	432	7th July 1721	Making and printing globular sea charts -	55
WILTON, RICHARD - - -	17	15th July 1620	Making chamletts - - - - - -	9
WOLFEN, JOHN GASPER - -	4	1st July 1617	Making oil - - - - - - - -	5
WOOD, WILLIAM - - -	502	18th Sept. 1728	Making raw iron, or iron metal, in an air furnace with pit coal - - - - -	72
WORCESTER, EDWARD, MARQUESS OF.	131	8th Feb. 1661	Making watches or clocks to go without winding up; making guns or pistols; detaching horses from coaches on their taking fright; making boats sail against wind and stream - - - - - -	23

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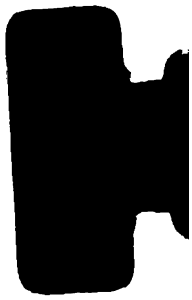

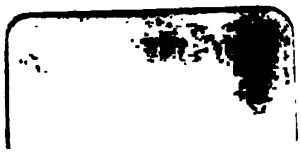

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